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— Cappadocia/Turkey —

**INTERNATIONAL CONFERENCE ON
AGRICULTURE, FOREST, FOOD
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***ABSTRACT PROCEEDING BOOK OF
ICAFOF CONFERENCE***

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Cappadocia- Nevşehir/Turkey – 2017

Dear Colleagues

Welcome to the official site of International Conference on Agriculture, Forest, Food Sciences and Technologies (ICAFOF 2017 Cappadocia / Turkey). This three-day conference will be held in DoubleTree by Hilton Hotel Avanos – Cappadocia, Nevsehir, Turkey during May 15 - 17, 2017. The official presentation language of the ICAFOF is English or Turkish. But the abstracts should only be written in English in Microsoft Word. The conference will be organized by University of Nevsehir Hacı Bektas Veli. The ICAFOF-Cappadocia 2017 aims at presenting current researches being carried out in the areas of Agriculture, Forest and Food for scientists, scholars, engineers and students from the universities, technologists, entrepreneurs and policy makers all around the World. Thus, The ICAFOF - Cappadocia provides opportunities for the delegates to exchange new ideas and application experiences face to face, to establish business or research relations and to find global partners for future collaboration. We hope that you can join us in the ICAFOF - Cappadocia 2017 with new insights. We look forward to welcoming you to Cappadocia, where is a fascinating nature wonder in Turkey.



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15-17 May 2017

Temporal Variation of Reference Evapotranspiration (ET_0) in Central Anatolia Region, Turkey and Meteorological Drought Analysis via SPEI (Standardized Precipitation Evapotranspiration Index) Method

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Abstract

Analysis of temporal variation of reference evapotranspiration (ET_0) is important in arid and semi-arid regions where water resources are limited. In this study, temporal variation of reference evapotranspiration (ET_0) and meteorological drought analysis through SPEI (Standardized Precipitation Evapotranspiration Index) method have been carried out in provinces of Central Anatolia Region, Turkey. Reference evapotranspiration of concerning provinces in the region has been estimated using Penman-Monteith method and one calendar year has been split up four periods as r_1 , r_2 , r_3 and r_4 . Temporal variation of reference evapotranspiration according to four periods has been analyzed through parametric Dickey-Fuller test and non-parametric Mann-Whitney U test. As a result, significant increasing trends for reference evapotranspiration have been detected and according to SPEI method used for estimating meteorological drought in provinces, mild drought has been experienced in general, and however there have been also a significant amount of events where moderate and severely droughts occurred.

Keywords: Central Anatolia Region, Drought Index, Penman-Monteith, Reference evapotranspiration, temporal variation

Acknowledgement: This research was chosen by the ICAFOF scientific committee as the best article in the field of agriculture in this conference.

Estimating The Juvenility in Pedunculate Oak Stands (*Quercus robur* L.) Through Artificial Neural Networks (Ulus-Drahna Case Study)

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Abstract

It is the most important aim of the science of silviculture to provide the sustainability of products and services offered by forests. In this regard, it needs afforestation activities through a successful natural and artificial regeneration. It is significant to increase the level of achievement for natural regeneration activities most suitable especially for natural forest ecosystem and to determine the acceptable level of juvenility for these studies. With regard to this, in this research carried out in the natural oak stands in the area of Ulus-Drahna, the West Black Sea Region, the stand dynamics such as height, size, crown diameter, the number of trees and natural juvenility of old stands in testing areas of 25x40 m according to randomized blocks test patterns were determined. The data related to all stand dynamics was investigated in 3 sets of data and included in the statistical analyses. In the statistical analyses was used the Feed-forward and Recurrent Artificial Neural Network Model. 1 input layer, 1 hidden layer and 1 output layer were used for this model. While 15 sets of data were used in the artificial neural network model in the input layer, 12 sets were used in the hidden one. Through the algorithm from the assessment of 70,7% of numerical values obtained from 3 sets of data was used in testing 29,3% of these raw values. 98,30% of the data used was utilized in modeling. Besides, the distribution of raw data set used for modeling the estimation were respectively 32,1%, 18,9% and 49,1% in 3 sets of data (Natural juvenility). On the other hand, the distribution of the data used in the estimation of natural oak juvenility by artificial neural networks were respectively 31,8%, 31,8% and 36,4% in 3 sets of data. The estimation of natural juvenility in oak forests of Ulus-Drahna area for 3 output sets at different levels was achieved through 100% success through the Feed-forward and Recurrent Artificial Neural Network Model. Also, the corrected R² values calculated for 3 juvenility levels of the implemented artificial neural network model were respectively 89,34%, 77,70% and 88,73%. According to these results, through at least 5 variables could be predicted the natural level of juvenility with 100% success in ecological conditions in Ulus-Drahna area and in the oak forests of similar habitat conditions.

Keywords: Artificial Neural Networks, Pedunculate Oak, Natural Juvenility, Ulus, Estimation, Silviculture

Acknowledgement: This research paper was chosen by the ICAFOF scientific committee as the best article in the field of forest in this conference.

Change of Microbiological Quality Attributes of Marinated Herring Treated by High Pressure

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Abstract

High pressure processing (HPP) has become an alternative to conventional methods that depending on pressure level, pressure holding time/temperature and product characteristics allows microorganisms to be inactivated product-spoiling microorganisms at low temperatures with fewer changes in texture, colour and flavour of the product as compared to conventional technologies. Destructive effect of HPP on microorganisms is based primarily on inactivation of enzymes, damage of DNA, RNA, ribosomes, and the destruction of membranes and cell walls. The objective of this study was to evaluate the effects of HPP on the microbiological quality of marinated herring during three months storage. Herring samples were prepared with 2% acetic acid+8% NaCl solution and treated with 100, 300 and 500 MPa pressure levels for 5 and 10 min. Marinated herring samples were evaluated in terms of lactic acid bacteria (LAB), total psychrophilic bacteria, hydrogen sulfide-producing bacteria (H₂S-producing bacteria), yeast and molds. During the storage period, LAB and total psychrophilic bacteria cells increased in control and 100 MPa pressure treated groups and exceeded 7.0 log cfu/g at 60th day of the storage in these groups which considered as acceptable limit for fish species. 500 MPa pressure treatment suppressed the growth of LAB and psychrophilic bacteria until 45th day of storage. HPP treatment significantly reduced the H₂S producing bacteria cells and yeast and molds (300 and 500 MPa). There was no H₂S producing bacteria growth in 300 MPa pressure treated groups until 30th day of storage, while growth was not observed in 500 MPa pressure treated groups throughout the storage period. Results of this study showed that 300 and 500 MPa HPP treatment has significant effect on the growth of microorganisms and contribute to microbiological quality of marinated herring during three month storage.

Keywords: High pressure processing, Marinated herring, Microbiological quality

Acknowledgement: This research paper was chosen by the ICAFOF scientific committee as the best article in the field of food in this conference.

Shortterm Intensive Fattening of Improved Sheep and Goat Genotypes

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Abstract

The fattening performances of meat type sheep and goat genotypes that of improved in Çukurova University, Agricultural Faculty, Sheep and Goat Research Unit were determined in this study. 10 heads of Çukurova Boer and 10 heads of Çukurova Assaf lambs were group fed during 40 days. At the end of the study 4 heads of animals were slaughtered for carcass evaluation. Organoleptic pannel were conducted on the meat sample of both groups. At the end of the study it has been determined that, quality and quantity of the kid meat were satisfied as lamb meat.

Keywords: Kids, lambs, carcass, feedlot, quality, taste

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A novel intermediate process design for inactivation of *Aspergillus flavus* during the production of spice red pepper: Direct Ethanol Injection

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Abstract

Molds, especially *Aspergillus flavus*, are organisms of great importance to spice red pepper industry. Mold contamination greatly affects the keeping quality of the spice. The study is a feasibility study of an intermediate process in red pepper production which cover investigation of the effects of two different temperatures and ethanol amounts on *Aspergillus flavus* molds in fresh red pepper. whole fresh red pepper fruits were experimentally contaminated with *Aspergillus flavus* to achieve mold growth. Then, *Aspergillus flavus* inoculated red peppers were stored at 28 ve 37 °C temperatures during 21 days by injecting ethanol (96%) at the ratios of 1, 3 and 5 ml. It was found that ethanol was highly effective on the mold growth according to the mold count results ($p < 0.05$). While the rapid mold growth was observed in control samples that not adding ethanol (0 ml) at 28 and 37 °C, the mold growths in the ethanol injected samples decreased by increasing the amount of ethanol. It was observed that the mold amounts for all red pepper samples at 37°C were found to be the more than that of at 28 °C for the same storage times. First order kinetics was used to determine the growth rate constant (k) of *Aspergillus flavus*. The highest k values were found in control samples for both two temperatures ($1.13 \text{ cfu g}^{-1} \text{ day}^{-1}$ at 28 °C, $1.22 \text{ cfu g}^{-1} \text{ day}^{-1}$ at 37 °C). Otherwise, it was respectively determined as 0.38, 0.23 and $0.19 \text{ cfu g}^{-1} \text{ day}^{-1}$ at 28 °C, and 0.37, 0.26 and $0.23 \text{ cfu g}^{-1} \text{ day}^{-1}$ at 37 °C in the samples injected with 1, 3 and 5 ml of ethanol.

Keywords: *Aspergillus flavus*, ethanol, growth rate constant, process, red pepper

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Development of a Core Collection for the Mediterranean Groundnut Collection

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Accessions could not be evaluated and documented efficiently in large collections. Core collection concept is an effective and valuable method for overcoming the difficulties of managing a large number of entries. In this approach, a small set of accessions (usually 10% of the entire collection) are chosen with the help of different statistical models. The Mediterranean groundnut collection consists of 256 accessions from different botanical varieties representing over 25 countries across Asia, America and Africa. However, an even smaller subset of collection is required for traits which are difficult and expensive to measure. From this point, we aimed to establish a core collection that includes the minimum number of accessions that are representative of the phenotypic diversity of the Mediterranean groundnut collection. Methodologically, principal component score strategy was employed to identify accessions, a part of core collection. Data for eight quantitative traits (days to first flowering, days to the 50% flowering, plant height, number of pods per plant, number of branches, shelling percentage, thousand seed weight and pod yield) of 256 accessions were subjected to principal component analysis to reduce the number of variables and as well as scoring for each genotype. The contribution of each accession to total variation was calculated with the use of scores and accessions were sorted in descending order according to their relative contributions. The size of the core collection was identified 10% of the entire collection including 26 genotypes from two subspecies and four botanical varieties. The *t-test* was used to compare the core collection with the entire collection with respect to the quantitative traits. Results showed that mean values of eight traits were not significantly different between the core and entire collection. The core collection presented in this study is therefore highly suitable and representative for Mediterranean groundnut collection.

Keywords: Characterization, agronomy, breeding, selection, utilization

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15-17 May 2017

Adıyaman'da Tüketime Sunulan Tavuk Etlerinde *Salmonella* Türlerinin Yaygınlığının Biotinil-Tiramid Yöntemi İle Belirlenmesi

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Özet

Dünya genelinde, *Salmonella* spp. nörovirüslerden sonra en fazla besin zehirlenmesine sebebiyet veren patojenik bakterilerdir. *Salmonella* cinsine ait 2500'den fazla serovar tanımlanmış olup, bu cinse ait serovarların en çok tercih ettiği konak kanatlı hayvanlardır. Dolayısıyla, salmonellae serovarlarının sebebiyet verdiği gıda zehirlenmelerinin en yaygın olanı kümes hayvanları etlerinin (özellikle tavuk eti ve bu etin kullanıldığı mamullerin) tüketilmesiyle ortaya çıkmaktadır. Bu çalışmada Adıyaman İli'nde tüketime sunulan kümes hayvanı (tavuk) etlerinde *Salmonella* cinsine ait bakterilerin yaygınlığının belirlenmesi amaçlanmıştır. Bu amaç için *Salmonella* spp.'ye spesifik olarak bağlanabilen manyetik mikro boncuklar kullanılmış ve immünomanyetik separasyon (IMS) yapılarak bakteriler izole edilmiştir. Daha sonra tiramid amplifikasyonu (TA) yardımı ile bu patojenik bakterilerin kanatlı etlerindeki yaygınlık oranları belirlenmiştir. Bu çalışmada perakende olarak satılan tavuk etlerinden rastgele olarak seçilen 124 örnek çalışılmış ve bunların 35 (% 28.23) adedinde *Salmonella* spp.'ye rastlanılmıştır.

Anahtar kelimeler: *Salmonella*, biyotin, kanatlı etleri, manyetik boncuklar.

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Comparison Ploughshare Bolts in Respect of Hardness and Friction Coefficient

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Abstract

Parts working in soil are exposed to effects of different abrasive particules in soil. Hardness of the particules that is mostly higher than tools' causes the tool to be worn or broken. The tools are made in detachable form in order to prevent to be broken. The form is mostly made with bolts and nuts. One of agricultural tools working in soil, Ploughshare is joined to plough beam with bolts. The galvanised bolts are manufactured in form of countersunk head and DIN 604 standard. In our study, hardness (HB) and friction coefficient (μ) of six different plough bolts are examined. The average values of friction coefficient are determined as 0.20, 0.24, 0.16, 0.12, 0.15, 0.18 and Hardness' 102, 137, 111, 100, 101, 105 respectively.

Keywords: Ploughshare bolts, Hardness, Friction coefficient

Determination of Carbon Emissions in Shallow Soil

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Abstract

Global climate change is known to be a result of atmospheric greenhouse gases. Thus, the atmospheric greenhouse gases should be reduced to prevent the climate change. Based on this fact, scientists have been working to reduce greenhouse gases (CO₂, N₂O, CH₄). Due to the increases in CO₂ emissions in agricultural lands, the interest in scientific research had moved to this field. In the present study, the exposed (shallow) soil CO₂-C emissions in Harran Plain were measured. The study was conducted at Harran University Osmanbey Campus in three replicates. Climate data were obtained with a data logger in the experiment sites where the study was conducted. At the end of the study, the soil CO₂ emissions was compared with the climate data. The soil CO₂ emissions were measured weekly using the soda-lime method. SPSS 16 software was used for data comparison. The average soil CO₂-C emission was $8.70 \pm 0.57 \text{ g m}^{-2} \text{ week}^{-1}$ according to the results obtained in the study. Climate data obtained for the same period reflected that soil moisture was $17.21 \pm 2.05\%$ and soil temperature was $12.87 \pm 1.80^\circ\text{C}$. A very significant positive correlation was found between soil CO₂ emissions and soil temperature ($r = 0.049$; $p < 0.01$) and there was very significant negative correlation between soil CO₂ emissions and soil moisture ($r = -0.196$; $p < 0.01$). There was a very strong statistically significant negative correlation ($r = -0.854$, $p < 0.01$) between soil moisture and soil temperature. While the soil CO₂-C emissions decreased as the soil moisture increased, it increased with the soil temperature.

Keywords: Shallow soil, carbon emissions, Harran Plain.

Determination of the Response of Some Cotton Varieties to Verticillium Wilt Disease Caused by *Verticillium dahliae* Kleb.*

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Abstract

Verticillium wilt disease is one of the most important factors affecting the rate of cotton yield. There is no economic chemical control for Verticillium wilt disease, but it is recommended to use resistant varieties to control against this disease. This experiment was carried out in a randomized plot design with four replications in the growth chamber to determine the response of some cotton varieties against a defoliating and non-defoliating pathotypes of *Verticillium dahliae* Kleb. In the study, a total of twenty cotton varieties being the resistant control GIZA 75 variety, the tolerant control CARMEN variety and the susceptible control ACALA SJ2 variety, defoliating (PYDV6 isolate) and non-defoliating (Vd 11 isolate) pathotypes were used and cotton varieties were tested using conidia suspension method. Variance analysis showed significant differences ($p < 0.05$) among varieties. While the lowest disease severity value of the defoliating pathotype was determined in the resistant control GIZA 75 variety (1.00), followed by the tolerant control CARMEN variety (1.75) and FAMOSA (1.87) variety. The highest disease severity value was determined in the susceptible control ACALA SJ2 variety (3.50) and BEREN (3.12) variety. The lowest disease severity value of the non-defoliating pathotype was again determined in the resistant control GIZA 75 (0.35) variety, followed by the tolerant control CARMEN variety and GAIA variety (1.37). While the highest disease severity value was again found in susceptible control ACALA SJ2 variety (2.50), followed by BEREN variety (2.12). As a result, FAMOSA and GAIA cotton varieties were tolerant to Verticillium wilt and BEREN variety was found to be susceptible.

Keywords: Cotton, Verticillium wilt, Resistance, Disease severity

*This study is a part of the experiments conducted by TUBITAK with project number 214O087

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15-17 May 2017

The Effect of Application of Biochar and Different Salt Concentrations to Soil On CO₂-C Emissions

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Abstract

Salinity and sodification, which have become a major worldwide problem, are rapidly increasing. Salt-sodic soils are a major problem for plant production, and carbon storage and emission rates in such areas are yet unknown. In the present study, carbon dioxide (CO₂) emissions in soil samples taken at 0-5 cm soil depth in Harran Plains were measured in laboratory conditions. For this purpose, sheep fertilizer (SF) and sheep biochar (SB) and solutions with different electrical conductivities (EC) (0, 4, 8, 12, 16 dS m⁻¹) were used. The CO₂ emission was measured by the Soda-Lime method in the study. Study findings demonstrated that CO₂ emissions decreased due to increased salt concentrations in SF and SB applied samples. CO₂ output was high during the first week of study and decreased during subsequent incubation periods. The test was completed in the 19th week, the point at which the cumulative CO₂ values no longer changed. The mean CO₂ output was 0.47-1.39 g m⁻² day⁻¹ in SB applied soil with different EC values, and the minimum CO₂ output was observed in EC₁₆ and the maximum CO₂ output was observed in EC₀ concentrations. In sheep biochar applications, the average was 1.24 - 2.12 g m⁻² day⁻¹ and the maximum output was measured at EC₀ and the minimum output was measured at EC₁₆ values. When sheep biochar is compared to SF, it was found that SB stored more carbon and caused lower emissions. The SPSS 10.0 statistical software was used to compare the data.

Keywords: corn biochar, salinity, sodicity, organic carbon, carbon emission

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15-17 May 2017

Comfort Level Analysis of Pedestrian Zone in Nişantaşı District İstanbul

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Abstract

Rapidly increasing world population is increasingly concentrated in the urban areas. Comfort level with the city's public spaces in crowded city's character as to affect the users' quality of life and health has a significant impact. Therefore, make improvements to the streets in cities where deemed necessary and appropriate by analyzing the comfort level of the street interventions in cities and city dwellers are more comfortable environment, will provide a healthy and peaceful way of life. Intensive construction in İstanbul, increase in population and motor vehicle causes the formation of uncomfortable environment for the city. In this study, İstanbul's daily pedestrian and the heavy vehicle flows, trade, housing, hosting a variety of functions such as education, history with a history of Nisantasi district Teşvikiye and Rumeli Streets in Şişli, expand the pedestrian comfort level and the compliance with the standards established suitability / unsuitability of to reveal is intended. For this purpose Teşvikiye and Rumeli Streets were analyzed from the qualitative and quantitative aspects. Weekdays and weekends in the study area has been demonstrated in different points of the vehicle and pedestrian density counts, according the equipment in the proper/ improper use of designated building types, floor height, and their effects on the level of comfort for pedestrians processed all of them on the map floor use has tried to present. Doing this study is required to crowded and become increasingly uncomfortable cities like İstanbul. Developed methodology for crowded urban spaces is a universal necessity to plan accordingly.

Keywords: comfort level, pedestrian zone, density of use, public space, urban space

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15-17 May 2017

Determination of Phylogenetic Structures of Some Honey Bee (*Apis mellifera* L.) Populations in Van Province by Molecular Technics

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Abstract

Within the scope of this study honey bee specimens that collected from Van province Bahçesaray and Çatak districts have been studied to determine the phylogenetic structures, comparing MtDNA, COI, 16s rRNA, and ND2 loci with the samples in gene data banks. The collected samples were taken from the 6 domestic beekeepers and 6 migrating beekeepers. The collected samples were brought to the Molecular Genetics laboratory under suitable conditions. DNA isolation was performed from samples taken from each of 12 operators for COI and 16s rRNA of mtDNA. After genomic DNA isolation and PCR analysis, PCR yields were sent to sequence analysis. The outcoming sequences were combined using gene analysis software, DNA Dynamo Program and phylogenetic analysis was performed using MEGA 7 Program. As a result of the analyzes, it was concluded that both immigrant and indigenous bee races grown in Van province were the same. The phylogenetic tree obtained by sequence analysis of the PCR products concluded that the samples were the similar for both loci. In comparison with the existing *Apis mellifera meda* sequences for COI and 16s rRNA loci obtained from the data bank, these sequence with bees in this study were determined to form different branches and did not display similarity parts of them. The situation was similar for the ND2 locus, races are concentrated as *Apis mellifera anatoliaca*, *Apis mellifera ligustica*.

Keywords: Honeybee (*Apis mellifera*), COI, phylogenetic, mtDNA, ND2, 16s rRNA

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Use of Magnetic Field Strength in Breaking Dormancy in Potato (*Solanum tuberosum* L.)

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Abstract

Dormancy is a state of lack of germination/sprouting in seed/tuber although required conditions (temperature, humidity, oxygen and light) are provided. Dormancy is based on hard seed coat (physical dormancy) or lack of supply and activity of enzymes (physiological dormancy) necessary for germination/sprouting. Dormancy is an important factor limiting production in many field crops. Several physical and chemical pretreatments to production material (seed/tuber) are carried out for overcoming dormancy. Physical and physiological dormancy can be found together in some plants and this event makes difficult to provide high frequency healthy seedling growth. Whereas, emerging of all production material (seed, tuber) sown/planted and forming healthy seedling is a prerequisite of plant production. A new method is developed in which magnetic field strength is firstly used in the world for breaking dormancy in the study. In the study, tubers of potato were planted in soil after keeping them for different period of times (0-control, 24, 48 and 72 hours) at different magnetic field strengths (0-control, 75, 150 and 300 mT), measurements were performed in the characters of germination and seedling growth. At the end of the study, it was determined that magnetic field strength increased tuber sprouting significantly compared to control.

Keywords: Dormancy breaking, magnetic field strength, potato

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15-17 May 2017

Earthworm (Clitellata, Annelida) Records From Eskişehir, Sakarya and Düzce Province

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Abstract

In this study, earthworm samples collected from 4 different localities were determined. At the end of the study, 6 species belonging to 6 genus were identified: *Aporrectodea rosea* (Savigny, 1826), *Aporrectodea trapezoides* (Dugès, 1828), *Dendrobaena veneta* (Rosa, 1886), *Lumbricus rubellus* Hoffmeister, 1843, *Eisenia fetida* (Savigny, 1826), *Octodrilus transpadanus* (Rosa, 1884).

Keywords: Earthworms, Lumbricidae, Annelida, Fauna of Turkey.



Use of Culture Filtrates from *Penicillium expansum* to Assess the Resistance of Apple Cultivars Against Blue Mold

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Abstract

Use of cell-free culture filtrate prepared from potato dextrose broth (PDB) cultures of *Penicillium expansum*, a causal agent of blue mold diseases in fruits, was proved to be fast and effective screening procedure to assess the apple cultivars against blue mold. A 1-g of apple fruit from varying cultivars (Fuji, Golden, Granny Smith, Amasya and Starking) with or without skin was incubated in 1 ml PDB solution containing either 1×10^5 conidia ml^{-1} or 0.5 mg ml^{-1} fungal protein for 48 h at room temperature. Autoclaved PDB was used as control. Significant weight loss from fungal spore- or enzyme-treated fruits were evident with or without skinned apple cultivars as compared to that of control fruits, $P < 0.05$. Enzyme-treated fruits had remarkably higher loss than spore-treated fruits, $P < 0.05$. The enzyme filtrate was also used after storage at -20°C to assess the pathogenic activity of the filtrate. The results showed that the activity of filtrate remained stable as resulted in significant weight loss even after freezing. The enzymatic filtrate could be used to determine the resistance of apple cultivars against blue mold disease without the need of spore preparation or after long-term storage at freezing temperatures. We suggest that the resistance of the newly developed varieties or the preventive effects of either biologically active compounds or various chemicals could well be tested via the use of enzyme filtrates in postharvest studies.

Keywords: Postharvest studies, *Penicillium expansum*, Apple cultivars, Enzyme filtrate, Disease resistance.

Antimicrobial Susceptibility of *Enterococcus faecalis* Strains Isolated from Foods

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Abstract

Enterococci, involved in the microorganism group known as lactic acid bacteria, are the most controversial member of the group. One of the most important factors limiting the use of enterococci in the food industry is resistance to antibiotics. Enterococci possessed of the resistance of antibiotics causes their survival even in the hospital environment and the spread of resistant strains. These resistance genes can also affect humans through the food chain. These strains can be found in meat products, dairy products, ready-to-eat foods, and even they used as probiotics can be resistant to antibiotics. In this study, it was aimed to determine the levels of antibiotic resistance in 38 *Enterococcus faecalis* strains previously identified at the molecular level. Modified disc diffusion method was used for determining the antibiotic susceptibility levels. Antibiotics and disk concentrations used in this study were as follows: Penicillin G (10 µg), Ampicillin (10 µg), Erythromycin (15 µg), Tetracycline (30 µg), Chloramphenicol (30 µg), Gentamycin (120 µg), Kanamycin 30 µg), Lincomycin (2 µg), Streptomycin (300 µg), Nalidixic acid (30 µg), Rifampin (5 µg), Ciprofloxacin (5 µg). Strains were identified as resistant and sensitive, by measuring the zone diameter around the antibiotic discs. It was found that 10 (26%) of 38 *E. faecalis* strains were resistable to lincomycin, 4 (11%) of it to rifampin and 38 (100%) of it to nalidixic acid. There was no resistance to penicillin G, ampicillin, erythromycin, tetracycline, chloramphenicol, gentamycin, kanamycin, streptomycin and ciprofloxacin in our isolates.

Keywords: *Enterococcus faecalis*, Antibiotic Resistance, Food

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***Enterococcus Faecium* Suşlarının Antibiyotik Duyarlılıklarının Saptanması**

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Özet

Enterokoklar, proteolitik ve lipolitik aktivitelerinden dolayı pek çok fermente gıdanın duyuşal özelliklerinde rol oynayan, bazı suşları bakteriyosin üretebilen, pastörizasyon sıcaklıklarına dirençli ve farklı sıcaklıklara ve üreme koşullarına adapte olabilme yeteneğine sahip bakterilerdir. Enterokokların bazı suşları ise bakteriyemi, endokarditis, üriner sistemde ve diğer dokularda enfeksiyonlara neden olan hastane kaynaklı patojen olduğu da bilinmektedir. Enterokokların patojenitesi virülens faktörleri ve antibiyotiklere direnç özellikleri ile ilişkilendirilmektedir. Günümüzde antibiyotik dirençliliği nedeniyle bakteriyel hastalıklar yeniden ve önemli bir tehlike oluşturmaya başlamıştır. Bu çalışmada geleneksel fermente gıdalardan izole edilmiş ve moleküler düzeyde tanımlaması daha önceden yapılmış olan 62 adet *Enterococcus faecium* suşunda antibiyotik dirençlilik düzeylerinin belirlenmesi amaçlanmıştır. İzolatların antibiyotik dirençlilik özelliklerinin belirlenmesinde disk difüzyon test yöntemi kullanılmıştır. Çalışmada kullanılan antibiyotikler ve disk konsantrasyonları ise şu şekilde sıralanmaktadır: Penisilin G (10 µg), Ampisilin (10 µg), Eritromisin (15 µg), Tetrasiklin (30 µg), Kloramfenikol (30 µg), Gentamisin (120 µg), Kanamisin (30 µg), Linkomisin (2 µg), Streptomisin (300 µg), Nalidiksik asid (30 µg), Rifampin (5 µg), Ciprofloksasin (5 µg). 35-37 °C'de 24 saatlik inkübasyonun ardından antibiyotik diskler etrafında oluşan zon çapları ölçülerek, izolatların antibiyotiklere duyarlılık ya da dirençlilik durumları değerlendirilmiştir. 62 adet *E. faecium* suşunun 3'u (% 5'i) kanamisine, 1'i (%2'si) gentamisine, 6'sı linkomisine (% 10'u), 7'si (% 12'si) rifampine ve 62'si (% 100'ü) ise nalidiksik aside karşı dirençli bulundu. İzolatların hiçbirinde penisilin G, ampisilin, eritromisin, tetrasiklin, kloramfenikol, streptomisin ve ciprofloksasine karşı direnç saptanmadı.

Anahtar Kelimeler: *Enterococcus faecium*, Antibiyotik Dirençlilik, Gıda

Teşekkür: Bu çalışmayı 16L0443001 nolu proje ile destekleyen Ankara Üniversitesi Bilimsel Araştırma Projeleri Koordinatörlüğüne teşekkür ederiz.

In Situ Rumen Degradation Characteristics of Maize, Sorghum and Sorghum-Sudan Grass Hybrids Silages as Affected by Stage of Maturity

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Abstract

This research was conducted at GAP International Agricultural Research and Training Center, Diyarbakır and East Mediterranean Agricultural Research Institute, Adana, Turkey. Whole plant of maize (*TTM-815*, *DK-711*), sorghum (*SS-506*, *FS-5*) and sorghum x sudan grass hybrids (*P-988*, *Grazer N2*) were grown under semi-arid conditions and harvested at different maturity stages (Mid-Flowering-MF, Milk-Line-ML and Hard-Dough-HD) and ensiled to investigate *in situ* degradation characteristics. Three replicate silage samples were incubated at 0, 12, 24, 36, 48, 72 and 96 h. in three rumen fistulated Holstein heifers. Effects of species had a large impact on rumen degradation characteristics values (a, b, (a+b), c), effective dry matter degradability (EDMD) and metabolizable energy (ME, MJkg⁻¹) for maize (M), sorghum (S) and sorghum x sudan grass hybrids (SSH) silages. Effective dry matter degradability (EDMD_(0.05)) of dry matter was found as 286.65, 259.37, 265.0 g /kg for species silages respectively (p<0.0001). Acid detergent fiber (ADF) was found to be the best single predictor of effective dry matter degradability of sorghum x sudan grass hybrids silages (P<0.05, R=0.448).

Keywords: Harvesting stage; Maize; Metabolizable energy; Rumen degradation characteristics; Sorghum

Influence of Grape Pomace Powder on Rheological Characteristics of Wheat Flour Dough

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Abstract

Grape pomace (GP) by-products of wine industry are considered as a good sources of polyphenols, antioxidant and dietary fibre. Huge amounts of GP generated during wine production. The objective of this study was to evaluate the effect of red (Öküzgözü) and white (Narince) grape by-products on rheological properties of wheat flour dough. Dough rheology was determined using a farinograph and also with Kieffer dough and gluten extensibility rig and Dobraszczyk/Roberts dough inflation system of texture analyser. Powders of white (WGP) and red (RGP) were incorporated in wheat flour at levels of 5, 7.5 and 10% (w/w). Water absorption and dough development time from the farinograph characteristics of dough were not showed any significant change while stability decreased and softening was increased. Kieffer dough and gluten extensibility rig analyses were resulted that the resistance to extension was increased at 5% addition level, but remained constant at 7.5% level and decreased at 10% level as compared with the control. Incorporation of GP was reduced curve area and extensibility of doughs significantly. Dough pressure measured with dough inflation system was not showed a significant change up to 7.5% of RGP and after that it began to decrease. However 5% of WGP caused an approximately 142% increase in pressure, at an increasing rate (towards 5% to 10%) this value dropped to 97 mm from 338 mm. Significant reductions in L and W values were observed relative to the control, and this decrease was further with parallel to increase at incorporation level. GP can be considered as suitable ingredient for wheat flour doughs unless the additional level exceeds 5% irrespective of which is obtained from RGP or WGP. Enrichment of wheat flour with low concentrations of GP will be increase the functional properties of bakery products produced from this mixture.

Keywords: Wine by-product, farinograph, dough, Kieffer, dough pressure, extensibility

Determination of Some Properties in Drinkable Yogurt (Ayran) Produced with Honey

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Abstract

It is known that drinkable yogurt (ayran) has salty and sour characteristic, traditionally. In this study, flower honey, pine honey and mixed honey (mixture of flower and pine honey 1:1) were added to ayran. Ayran was produced by adding at two different rates (% 10 and % 20) of each type of honey (flower and pine) and mixed honey. Ayran samples were analysed as chemical and microbiological (lactic acid bacteria, total mezophilic bacteria) during storage periods (1., 10. and 21. day). In addition, sensorial properties of ayran samples (appearance, texture, taste, odor, overall acceptability) were determined. Total dry matter of ayran samples were changed from 14.789 % to 20.971 %. The titration acidity was found to be min 0.508 % and max 0.590 % during the storage period (% lactic acid). Pine honey's and flower honey's refractive index values were 82 % and 80.5 %, respectively. According to Tukey test, samples showed a significant difference for total dry matter ($P<0.05$). But, there weren't a significant difference in % lactic acid, % salt, pH and % fat. Depending on time, samples didn't show a significant difference for dry matter, % fat, % salt. However, there were a significant difference in pH and % lactic acid ($P<0.05$). All of Ayran samples exhibited thixotropic flow behaviour. And, according to power law model, ayran samples showed non-Newtonian flow behaviour (pseudoplastic), because flow index was less than 1 in ayran samples. As a result of the sensory evaluation, ayran samples with 10 % pine honey, 10 % mixture honey, 10 % flower honey, 20 % pine honey, 20 % flower honey and 20 % mixture honey were liked, respectively.

Keywords: Ayran, pine honey, flower honey, chemical properties, viscosity

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Oil Seeds Human Nutrition Location Nutrition and Oil Seeds Deficit in Turkey

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Abstract

Oils are organic compounds composed of fatty acids and glycerol, as well as the most economical energy sources. They provide more than twice as much energy as the same amount of carbohydrates and proteins. Oil is a source and carrier of vitamins (A, D, E and K), and fat is required for their absorption in the body. In this case, it turns out that it is necessary to be more conscious and responsive in every stage of oil consumption, from the choice of oil type to the consumption pattern. According to normal nutrition rules, the amount of fat a person needs is 23 kg, this amount is 21 kg / year in our country and 35 kg in EU countries. The per capita oil consumption in the world is about 15 kg / year. Oilseed plants produced in Turkey; Soybean, groundnut, sunflower, sesame, canola, corn, safflower and cotton, In addition to this, we also get oil from olive and hazelnut plants. Although there are enough agricultural areas in Turkey to produce oil seeds, as the amount of oil needed can not be met by domestic production, significant amounts of oilseeds and crude oil are imported every year. In line with the demand for oil seeds, production is lower every year than the previous one. In this review study, the production, yield, import-export tables and solution proposal of oilseeds were examined.

Keywords: Oils, oilseeds, production, oil deficit

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15-17 May 2017

The Effect of Lead Pollution on Agricultural Production and Human Health

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Abstract

Pollution of agricultural lands is one of the environmental problems that is becoming more and more important nowadays. Heavy metal pollution is at the forefront of these problems due to industrial and agricultural activities. As a consequence of the heavy metal pollution that occurs in the agricultural soil, these pollutants are accumulated by the cultivated plants and reach the human body through the food chain. Lead pollution has an important place among heavy metals. Lead is a heavy metal widely distributed and present in many forms on earth's natural resources. Concentrations of lead in the environment are rapidly increasing due to anthropogenic activities. Lead damage occurs indirectly by binding lead to free radicals or directly by binding to molecules. Plants can protect themselves from the stress of lead heavy metal by developing mechanisms such as avoidance, accumulation and defense from the intake of lead heavy metal. It is known that lead application affects enzyme activity, water balance, growth and development, mineral matter uptake and transport, hormone level and membrane permability depending on plant type, dose and duration. When all these conditions are taken into consideration, avoiding heavy metal lead stress has become an important field of work that can increase productivity in plant production and affect human health as well as to attain quality standards.

Keywords: lead, heavy metal, plant production, human Health



Comparison of Housing Plan and Furniture in Turkey and Sudan Which Believe the Same Religion

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Abstract

In this research, it was aimed to compare plan, similarities, differences and specific parts of detached and apartment type houses in Sudan and Turkey, where the majority of the population is Muslim. For this purpose, the solutions of detached and apartment type residence plans in Sudan (Khartoum) and Turkey were researched and examined. Common and different parts are determined. As a result; unlike the houses located in Turkey, there were two entrances to the use of men and women in Sudan's detached housing, the beginning of the layouts with the living room, there were two living rooms for the use of men and women, and two separate toilets for guests and households. It has been determined that the furnishings are similar characteristics and showy.

Keywords: Furniture, Housing, Planning

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15-17 May 2017

Detection and Isolation of *Listeria* spp. in Ready-to-Eat Foods in Turkey

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Abstract

Elimination of pathogenic bacteria is a major concern for food industries. Among all the micro-organisms, *Listeria monocytogenes* are frequently involved in microbial outbreaks. The objectives of this study were to determine the prevalence of *Listeria* spp. in ready-to-eat (RTE) foods. A total of 154 RTE food samples were collected from Ankara and Çanakkale to examine the presence of *Listeria* spp. Microbiological analysis of the collected samples were performed according to International Standardization Organization (ISO 11290-1) procedures in this study. Briefly, 25 g of samples were added to 225 ml of half Fraser Broth as the first enrichment culture in stomacher bag and were homogenized in a stomacher and incubated for 24 h at 35 °C. After incubation, 0.1 ml of half Fraser broth was added to 10 ml of Fraser broth as a second enrichment culture and incubated at 35 °C for 48 h. Then each sample tube was inoculated onto ALOA agar and PALCAM agar and the plates were incubated for 24-48 h at 35 °C. 3 to 5 presumptive colonies were selected. Suspected isolates which matched to all identification parameters according to reference method (Gram staining, catalase activity, oxidase activity, motility test) were evaluated as positive. API *Listeria* identification kits were used further confirmed. Out of 154 RTE food samples, *Listeria* spp. was detected in 40 (25.97%) samples in which 15 (37.5 %) were positive for *L. monocytogenes*. 13 *L. innocua* (32.5 %), 6 *L. welshimeri* (15 %), 5 *L. grayi* (12.5 %), 1 *L. ivanovii* (2.5 %) were determined according to API *Listeria* identification kits. This work revealed consumption of RTE foods as a potential risk of listeriosis in these regions. The high contamination rate of *L. monocytogenes* in RTE foods was of great concern.

Keywords: *Listeria*, Ready to Eat Foods, Isolation, API *Listeria* Identification Kits

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Possibilities To Enhance Goat Meat Market Chain in Mediterranean Countries

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Abstract

One of the limited scientific studies of livestock production is meat type goat production. Goat meat, particularly in tropical regions, Southeast Asia and more is consumed due to be preferred by people with low incomes in Africa. Due to insufficient marketing situation, organisational structure, prejudice and grassland possibilities, economic value of goat meat is very low. On the other hand, besides of goat meat production cost is low and has different advantages and goat is use low productive grassland areas and it is very effective livestock production systems for cost effective rantability. During last 10 years, goat production sector has changed in Turkey. The number of dairy goat farms has increased sharply and the possibilities of marketing to goat meat come into agenda, as well. In this review importance of the goat meat production and industrial goat meat production sector and their sustainability will be discussed.

Keywords: Goat meat, meat production potantial, sustainability

Özet

Et tipi keçi yetiştiriciliği, üzerinde en az bilimsel çalışma olan hayvansal üretim şeklidir. Keçi eti, özellikle tropik bölgeler başta olmak üzere, Güneydoğu Asya ve Afrika'da düşük gelir düzeyine sahip insanlar tarafından tercih edilmesi nedeniyle daha çok tüketilmektedir. Ülkemizde ise pazarlama, organizasyon, var olan yanlış algı ve mera koşullarının yetersizliği gibi nedenler sonucu ekonomik değeri oldukça sınırlıdır. Oysa keçi eti, üretim maliyeti açısından avantajlı olmasının yanı sıra keçinin en elverişsiz meraları bile etkin biçimde değerlendirmesi sonucu fayda maliyet açısından et etkin hayvansal üretim kollarından birisidir. Türkiye'de keçi yetiştiriciliği son 10 yıl içinde büyük ölçüde değişim göstermiştir. Keçi sütü üreten işletmelerin artması ile keçi eti de gündeme taşınmıştır. Bu çalışmada keçi yetiştiriciliği et üretiminin önemi ele alınacak ve keçi etine dayalı endüstriyel üretimin sürdürülebilirliği tartışılacaktır.

Anahtar kelimeler: Keçi eti, et üretim potansiyeli, sürdürülebilirlik

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Effect of Different Housing Systems (Closed System, 50 % Feed + Pasture, Completely Pasture) on Energy Usage Efficiency of White Turkey Reared

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Abstract

This research was performed with the purpose of comparing and determining an energy usage efficiency of white turkey closed, 50 % feed + pasture, completely pasture systems. Trials and measurements were performed at the Department of Animal Science, Faculty of Agriculture in Bingöl University located in Bingöl province of Turkey in 2014. In the research, those 90 turkey chicks were divided into 3 trial groups (closed system, 50 % feed + pasture, completely pasture systems), each group having 30 wheat turkey chicks, with three repetitions distributed and the total duration of the research took 17 weeks. To accomplish this aim, the energy input-output of every 1000 white turkey closed system, 50 % feed + pasture, completely pasture systems was calculated. Energy usage efficiency, energy productivity, specific energy and net energy were calculated closed system, 50 % feed + pasture, completely pasture were determined 0.64, 0.01 kg MJ⁻¹, 70.01 MJ kg⁻¹, -232429.57 MJ (1000 bird)⁻¹ respectively; 0.63; 0.01 kg MJ⁻¹; 70.77 MJ kg⁻¹, -180602.18 MJ (1000 bird)⁻¹ respectively and 0.76, 0.02 kg MJ⁻¹, 59.33 MJ kg⁻¹, -85993.93 MJ (1000 bird)⁻¹ respectively. In conclusion, the white turkey production closed system, 50 % feed + pasture, completely pasture conditions is not an economic activity in terms of energy usage. Feed energy was determined as the highest ratio of total energy input in closed system. Electricity energy was determined as the highest ratio of total energy input 50 % feed + pasture, completely pasture systems. Modern and well established scientific practices should be used to obtain more energy efficiency. In addition, using solar energy to warm up poultry house may be useful in decreasing the electricity energy using and increasing the energy usage ratio

Keywords: Closed system, Energy usage efficiency, Specific energy, White turkey



A Study on the Effect of Different Feeding Methods on Live Weight Gain of White Turkeys with Repeated Measurement ANOVA and Profile Analysis

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Abstract

The subject of this study was to figure out the effect of different feeding methods on live weight gain of White turkeys (Big-6) with Repeated Measurement ANOVA and Profile Analysis. Totally 90 turkey pullets were divided into 3 groups (intensive, semi-intensive and extensive), 15 male and 15 female in each group, with three replicates. The birds in intensive group were kept in inside and fed by concentrated feed while semi-intensive group had access to pasture for 8 hours and pullets were received 50 % of feed of intensive group consumed. The pullets of extensive group were kept under a shadow and they just grazed on the pasture, not received concentrated feed at all. The experiment was lasted 16 weeks. The live weight gain of intensive, semi-intensive and extensive groups were 595.68 ± 12.15 , 495.31 ± 9.00 and 430.59 ± 11.65 g, respectively. Results of Repeated Measurement ANOVA noted that the effects of age and age x feeding method on live weight gain were significant ($P < 0.01$) after 16 weeks of age. Feeding method and feeding method x age interaction had significant ($P < 0.01$) effect on live weight gain in Profile Analysis, as well. According to Scheff's test, the differences between intensive and semi-intensive, intensive and extensive, semi-intensive and extensive groups were significantly ($P < 0.05$) important. The power of the test was 100 % in both methods. The efficiency of age factor and feeding method x age interaction were 0.829 and 0.569 in Repeated Measurement ANOVA, respectively. These values were 0.982 and 0.817 in Profile Analysis. The power of the test was equal but Profile Analysis method could be preferred to Repeated Measurement ANOVA because efficiency of factor in Profile Analysis was higher than in Repeated Measurement ANOVA.

Keywords: White turkeys, feeding method, live weight gain, Repeated Measurement, ANOVA, Profile Analysis

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15-17 May 2017

Edible Insects: Nutritional Advantages and Risk Assessment

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Abstract

About 1 million of the 1.7 million described animal, plants, insects and algae species on earth are reported as insects. It was observed that the greatest species diversity exists among insects and the number of these species increases substantially every year. Insects are healthy, nutritional alternatives for many regional and national diets and they were used as a traditional part of ethnic group diets. Over 2000 insect species are known to be edible in different regions as Africa, Asia and Latin America in the world. The most frequently consumed species are beetles (31 percent) followed by caterpillars (18 percent), bees, wasps and ants (14 percent), grasshoppers, locusts and crickets (13 percent), cicadas, leafhoppers, planthoppers, scale insects and true bugs (10 percent), termites and dragonflies (3 percent), flies (2 percent) and other species (5 percents). From a nutritional point of view, many insects have rich content in protein (13–77 percent in dry matter), lipids (10-60 percent in dry matter), dietary fiber (8-17 percent in dry matter), micronutrients (high iron, zinc and vitamin B1, B12, A, D, E contents) and high dietary energy density (from 89 kcal to 1272 kcal/100 g, brown-spotted locust and green ant, respectively). In addition serving as a nutrient source, it was reported that different insect species played an significant roles in plant reproduction, waste biodegradation and control of harmful pest and provided valuable products as carmine dye, shellac, silk, resilin protein, venom etc for use in the other industrial areas. This review will be focused on nutritional value and safety aspect of edible insects for human consumption.

Keywords: Insects, edible, nutritional, food safety, risk assesment



Investigation of the Effects of Ultrasonic Sound Waves in Kefir Fermentation

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Abstract

To give the desirable characteristics to the fermented foods and as well as to have the desired quality of the final product can be achieved with a fermentation lasting from a few hours to several months. For this reason, decrease in fermentation time especially has an important role in terms of operating costs and product quality. This study aimed to investigate the microbial activity enhancement effects of ultrasonic sound waves in kefir fermentation. For this purpose, the effect of ultrasonication (5 min continuous, 24 kHz, 400W, 22mm prob, 30 % amplitude) on fermentation time was evaluated in kefir fermentation. In addition, microbiological analysis and pH measurement were performed and titratable acidity (lactic acid %) was determined during the fermentation, the amount of EPS produced was measured at the end of the fermentation. The fermentation time was decreased 1 hour by ultrasonication applied in kefir fermentation. Evenmore, the treatment improved EPS and lactic acid production rate but it did not affect the amount of EPS and lactic acid in kefir statistically ($p>0.05$).

Keywords: Ultrasonication, kefir, microbial activation, fermentation time, EPS.

Effects of Homogenization Conditions on Microbial Transglutaminase Activity during Microencapsulation

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Abstract

Transglutaminase (protein–glutamine:γ-glutamyltransferase, EC, 2.3.2.13) is an enzyme catalyses an acyl transfer reaction using peptide-bond glutamine residues as acyl donors and several primary amines as acceptors. In recent years, production of transglutaminase by microorganisms has been an important development for the food industry. Microbial transglutaminase (mTG) has been used in food processing for improving flavor, appearance and texture due to its protein cross-linking properties. Since mTG is a substantial enzyme for food processing, preservation of this enzyme has become important. For this purpose, microencapsulation and drying techniques can be used to extend its shelf-life. Nevertheless, the homogenization step of microencapsulation before drying process can be harmful for the enzyme activity; hence, the homogenization conditions should be investigated in detail. In this study, a partially purified commercial mTG enzyme solution (4.5% dry matter) was mixed with different coating materials (mannitol, maltodextrin and gum arabic) using rotor-stator homogenizer at different homogenization rates (3600, 7200 and 11200 rpm) and different homogenization times (1, 3 and 5 minutes). After applying different homogenization conditions to the commercial mTG, all the solutions were freeze-dried in metal plates at -80°C and dried in a freeze-dryer for 9 hours. The effect of homogenization conditions on enzyme activity (Unit/ml) was determined by comparing the initial activity and the activity after freeze drying process and the best homogenization conditions of mTG were determined according to the highest activity ratio. The results showed that the enzyme activity decreased when higher rates (11200 rpm) were applied. Also, the enzyme solution composed of all coating materials (mannitol, maltodextrin and gum arabic) was showed higher activity ratio than mannitol-enzyme solution. Consequently, 7200 rpm of homogenization rate and 5 minutes of homogenization time were chosen as the best homogenization conditions for the microencapsulation of mTG by freeze drying process.

Keywords: Microbial transglutaminase, homogenization, microencapsulation, freeze drying, enzyme activity

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— Cappadocia/Turkey —

15-17 May 2017

Microwave Drying of Mahlab (*Prunus mahaleb* L.) Puree

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Abstract

Consumption of natural and healthy foods which contain variety of phenolic compounds has been increasing recently. Because of this growing demand, fruit snack bars are becoming popular. Drying step is very important for the manufacturing of such fruit bars; however, this process could be crucial in terms of losing product quality, and it should be adjusted properly. Black mahlab (*Prunus mahaleb* L.) fruit, which is grown in West Asia, Mediterranean and Turkey, contains high level of antioxidant compounds especially anthocyanins and it could be favorable for producing of different fruit bars. Thus, in this study, microwave drying of the black mahlab puree was carried out as an alternative way to conventional drying methods and drying kinetics at different sample thicknesses and microwave powers were determined. Drying experiments were carried out using a household microwave oven. Different sample thicknesses of 3, 6, 9 mm and two different microwave powers (90 and 180 W) were used. The initial weight and the weight of the samples during drying were recorded to calculate dimensionless moisture ratio. The experimental moisture ratios were fitted to ten different thin layer drying models namely Midilli et al., Henderson and Pabis, Wang and Singh, Lewis, Logarithmic, Page, Parabolic, Two term, Two term exponential, Verma and drying constants were determined for all conditions. The model having higher coefficient of determination (R^2), lower chi-square (χ^2) and root mean square error (RMSE) values were selected as the best fitting model. According to the results, the drying times decreased when the sample thickness decreased and the power increased. The mathematical model defined by Midilli et al. was the best fitted model ($R^2 > 0.9965$, $RMSE < 0.023$, $\chi^2 < 0.0005$) at all conditions.

Keywords: Microwave drying, mahlab, mathematical modelling, puree, thickness

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— Cappadocia/Turkey —

15-17 May 2017

Feeding habits of Wildboar (*Sus scrofa*) in Inebolu Chestnut Forests

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Abstract

Knowing the biology of wild animals is not sufficient, it is also necessary to know habitat relationships for conserving species and sustainability. Wild boars (*Sus scrofa* Linnaeus, 1758) are one of the important species for game and hunting management. This species is widely distributed in Kastamonu. Wild boars are feeding many kind of forest fruits such as acorn, nut and chestnut. This study was carried out in Inebolu region of Kastamonu. Aim of this study was to investigate feeding behaviors and habitat characteristics of wild boar by using camera-trap data in the region. It was also used local forest documents to collection of the wildlife inventory data.

Keywords: Wild boar, Feeding Habits, Kastamonu

Water Diffusion of Parboiled Wheat During Drying

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Abstract

The main objective of this study was to compare effect of temperature and dryers on dehydration and diffusion modeling of parboiled wheat (bulgur) during drying. Parboiled wheat was cooked at atmospheric conditions, and then it was dried at 50 °C, 60 °C and 70 °C temperatures. Fick's model together with Arrhenius relationship were successfully used to evaluate water diffusion of parboiled wheat during drying for different dryers (natural air convection, forced air convection and vacuum drying) at 50, 60 and 70 °C with R² (0.9534-0.9923) and RMSE (0.03-0.06), respectively. Increase of temperature from 50 to 70 °C increased in D_{eff} values from 2.38x10⁻¹¹ to 5.84x10⁻¹¹ (59 % increase), 4.65x10⁻¹¹ to 8.51x10⁻¹¹ (45 % increase), and 8.70 x10⁻¹¹ to 14.10x10⁻¹¹ (38% increase) for natural air convection, forced air convection and vacuum drying systems, respectively. Dryer type and drying temperature significantly (P ≤ 0.05) increased the effective water diffusion coefficient (D_{eff}) of parboiled wheat during drying. The activation energy values of samples of natural air convection drying (41.46 kJ.mol⁻¹) compared with that of forced air convection drying (27.71 kJ.mol⁻¹) and vacuum drying (22.28 kJ.mol⁻¹) show a decrease suggests that more effective drying is made. It was concluded that vacuum dryer has been provided more effective drying than the other dryers.

Keywords: Diffusion, Bulgur, Parboiled wheat, Drying, Activation energy

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15-17 May 2017

Determination Of Forage Yield And Quality Of Some Alfalfa (*Medicago sativa* L.) Genotypes Collected From Natural Vegetation

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Abstract

This study was conducted in 2014 to determine the herbage yield and quality characteristics of the alfalfa (*Medicago sativa* L.) genotypes collected from the Lakes Region. The trial was set up in 3 replications, according to the design of random blocks. The plant material of the study was composed of 15 alfalfa genotypes and 2 registered alfalfa varieties. In the study; dry matter yield, crude protein ratio, crude protein yield, ADF, NDF, digestible dry matter, dry matter consumption and relative feed values were investigated. At the end of the study; In the alfalfa genotypes and varieties, dry matter yields 1143-2183 kg/da, crude protein ratio 17.4-22.6% and crude protein yields 209.7-473.0 kg/da, ADF 28.7-32.9%, NDF 39.5-42.6%, digestible dry matter 63.2-65.5%, dry matter consumption 2.81-3.04% and relative feed values 138.1-154.2 were found. According to the results obtained in the research, some genotypes were found to have better values than registered varieties. Genotypes Hüyük-1, Sandıklı-3 and Yenişarbademli-2 stands out for their herbage yield and quality characteristics. Based on these data, it is important to continue the work to develop a new alfalfa variety with high adaptation ability in Isparta and similar ecological conditions, in terms of contribute to the ongoing breeding work of the determined genotypes.

Keywords: Alfalfa, dry matter yields, crude protein ratio, relative feed values

Effect of Thermal Screens on the Nocturnal Heat Loss in Plastic Greenhouses

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Abstract

This study experimentally determines the impact of thermal screens used for heat protection in greenhouses and overall heat consumption coefficient on the heat loss. The study was conducted in greenhouses of 7.5 m × 20 m and a floor area of 150 m², which were covered with three different covering materials as single layer polyethylene (PE), double layer PE and polycarbonate (PC). The results demonstrate that the highest heat loss caused by wind was observed in the greenhouse covered with PC while the lowest heat loss was observed in the one covered with double layer PE. Overall heat consumption coefficients (u_{cs}) were calculated as 7.7, 6.1 and 7.8 W m⁻² K in greenhouses without thermal screens under a wind speed of 4 m s⁻¹, while the same values were 6.3, 4.2 and 5.0 W m⁻² K in greenhouses with thermal screens for single layer PE, double layer PE and PC, respectively. In addition, it was observed that thermal screens reduced heat loss thanks to their resistance. This impact reached the highest and lowest levels in PC and single layer PE, respectively. The impact of thermal screens on heat loss caused by the wind speed was also calculated. It was found out that while heat saving rate was 8% to 22% under very low wind speeds (< 0.5 m s⁻¹), it reached 17% to 36% under 4 m s⁻¹.

Keywords: Greenhouses, Greenhouse heating, Overall heat consumption coefficient, Thermal screen

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— Cappadocia/Turkey —

15-17 May 2017

Performance Evaluation of Irrigation Scheme of Zamantı Irrigation Association in Kayseri

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Abstract

This study was conducted to determine system performance of irrigation scheme under the control of Zamantı irrigation Union in Kayseri for the period of between 2010 and 2015. Irrigation ratio, sustainable irrigation area ratio, irrigation network intensity, water supply ratio, irrigation water fee collection ratio, irrigation network personnel intensity, irrigation area personnel intensity, output per unit command area, output per unit irrigated area, output per unit irrigation supply and output per unit water consumed were calculated as 26.50-50.40%, 47%, 7.08-13.46%, 72-123%, 40.72-81.41%, 10.83-13.00 km/personnel, 92-175 ha/personnel, 787-2887 \$/ha, 1664-6181 \$/ha, 0.22-7.58 \$/m³ and 0.27-0.99 \$/m³, respectively. The results indicated that farmers under the union should be more careful in the efficient use of irrigation water and some training courses related to proper water management practices by irrigation association should be given. Although irrigable land in the irrigation scheme was in the trend of decrease, the performance of the zamantı irrigation association was above the mid-level.

Keywords: Irrigation system performance, irrigation union, water management

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15-17 May 2017

Effects of Chickpea Yeast on Gluten-Free Bread Quality

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Abstract

Composed of gliadin and glutenin fractions, gluten proteins with unique viscoelastic and cohesive properties are of essential role in dough formation and gas retention in yeast-leavened bread production. However, gluten proteins pose a serious threat to celiac patients as opposed to healthy individuals. Celiac patients must therefore abstain from wheat, barley, rye and oat products. Gluten-free breads are produced from gluten-free starchy mixtures, including the flours or starches of certain cereals (corn, rice, sorghum etc.), legumes (chickpeas, common beans etc.) and pseudocereals (quinoa, buckwheat, amaranth etc.). Incorporated to the mixtures are usually hydrocolloids (gums), such as xanthan, guar, carboxymethyl cellulose or pectin, which partially substitute for the gas retention ability of gluten proteins in dough. However, bland flavor and poor textural properties of gluten-free breads are the main drawbacks for consumer acceptance and preference. In recent years, studies have shown that utilization of sourdough may partly alleviate those problems. Chickpea yeast, a variant of traditional sourdough process, is used in bakery products in some localities of Turkey and the Balkan countries. In this study, fermented chickpea liquor (so-called chickpea yeast) was used in a gluten-free mixture (equal amounts of rice flour and corn starch with 0.75% xanthan-guar gum mixture) at 15, 30 and 45% levels (based on flour weight; substituted with water). Gluten-free breads were produced by straight-dough and sponge-and-dough processes, and their quality characteristics were examined. It was determined that the chickpea yeast addition in the straight-dough process improved the sensory properties of breads more than that of the sponge-and-dough process. The gluten-free breads made of 30% chickpea yeast had noticeably improved flavor and textural properties as compared to the control. The results indicate that chickpea yeast can be incorporated into gluten-free bread formulations to overcome such drawbacks as bland flavor and poor texture.

Keywords: Celiac, Gluten-free, Bread, Chickpea yeast, Quality

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15-17 May 2017

Effects of Different Fungicides on Charcoal Rot Pathogen, *Macrophomina phaseolina* (TASSI) GOID.

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Abstract

The effects of different fungicides on the mycelial growth, microsclerot germination and seed pathogenicity of the charcoal rot pathogen *Macrophomina phaseolina* were investigated in this study. Six different fungicides [200g/L azoxystrobin + 125g/L difenoconazole (Quadris Maxx), 160g/L Prothioconazole +300g/L Spiroxamine (Input), 400 gr/L Mono & di potassium phosphonate (Agri-fos 400), 70% Thiophanete Methyl (Erzen), 360g/L Hymexazol (Tachigaren 30L) and 250gr/L Hydrogen Peroxide (Huwa-San)] were used in all trials. Six different doses between 1-100 ppm have been used in the mycelial growth and mikrosklerot germination tests. The fungicide with active agent of 200g/L azoxystrobin + 125g/L difenoconazole was the most efficient one with 87.1% inhibition rate in mycelial growth tests, and with 88.9% inhibition rate in microsclerot germination tests. In all the doses (1, 15, 25, 50, 75 ve 100 ppm), fungicides with 360 g/L Hymexazol, 250 gr/L Hydrogen peroxide and 400 g/L Mono & di potasyum phosphonate were ineffective on both microsclerot germination and mycelial growth. In the seed pathogenicity test, the fungicides with active agent of 200g/L azoxystrobin + 125g/L difenoconazole and 160g/L Prothioconazole + 300g/L Spiroxamine were most effective on inhibiting charchoal diseases of soybean, corn and peanut seeds. In all trials, no considerable effects of the fungicides with active ingredient of 400 gr/L Mono & di potassium phosphonate, 360 g/L Hymexazol and 250 g/L Hydrogen Peroxide were observed against *Macrophomina phaseolina*.

Keywords: Charcoal rot, *Macrophomina*, Fungicide, Seed pathogenicity

Evaluation of Antagonist Bacterial Isolates as Potential Biological Control Agent against Strawberry Charcoal Rot Disease Agent *Macrophomina phaseolina*

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Abstract

Strawberry (*Fragaria vesca* L.) is one the most important crops in Turkey with 13.423 ha cultivated approximately in 2014 yielding 376.070 tonnes. Charcoal rot disease, caused by soil-borne disease agent *Macrophomina phaseolina*, has recently become an economically significant challenge for strawberry production in Turkey. The phased-out of methyl bromide (MeBr) and the lack of equally effective fumigants has increased the difficulty in controlling soilborne pathogens. One of the non-chemical alternatives for strawberry fruit production is to use endophytic bacterial isolates. In this study, the antagonistic potentials of different species of endophytic bacterial isolates, obtained from healthy host plants of *M. phaseolina* were evaluated for their ability to suppress mycelial growth of *M. phaseolina* *in vitro* conditions. Endophytic bacterial isolates were obtained using selective nutrient media from different host plant of the pathogen and identified by using morphological and MALDI-TOF analyses system. Eleven isolates were selected as potential biocontrol agent *in vitro* studies. In dual culture assays, except for *Sphingomonas yanoikuyae*, all bacterial isolates were effective in reducing the colony forming of *M. phaseolina*. *Stenotrophomonas maltophilia* EAB6, *Bacillus subtilis* EAB8 and *B. subtilis* EAB9 isolates inhibited mycelial growth compared to the control (78.88, 78.33 and 83.88% respectively). Endophytic bacterial isolates reduced production of sclerotia. Inhibition zones emerging in dual culture assays have proved that endophytic bacterial isolates have an antibiotic-like mechanism of action. Morphological changes caused by the antagonist endophyte bacterial isolates on hyphal growth of pathogen were determined using the Nomarski DCI-assisted light microscopy. Microscopic observations on fungal hyphae found near the most effective bacterial isolate in dual culture petri plates have revealed morphological changes such as clotting and cytoplasmic discharge in cytoplasmic contents of hyphae. Effective endophytic bacteria found in the study could be a promising and sustainable source of biological control for charcoal rot disease agent.

Keywords: Strawberry, *Macrophomina phaseolina*, charcoal rot, biological control, antagonist.

Bread Quality of Some Bread Wheat Samples Produced in Lake District of Turkey

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Abstract

Bread is regarded as the main food throughout the world and daily consumption is very high. Therefore bread wheat is an important crop worldwide. The baking potential of wheat flours is influenced many factors planting area, soil properties and climatic conditions are fewer of them. This study was aimed to determine the baking performance of some bread wheat genotypes which were collected from local producers of Lake District of Turkey. Totaly flours of 8 different wheat genotypes; Bezostoja, Cumhuriyet 75, Gerek 79, İzmir 85, Mirzabey, Osmaniye, Sönmez 2001 and Yunak were used to produce breads. After baking; loaf volume, width, length and height of each loaf, crumb and crust color, textural properties such as loaf firmness, maximum force and area values of breads were tested. Among all wheat varieties, Sönmez 2001 wheat flour breads were found to have the highest bread volume with 442.5 cm³/100g, followed by Yunak and Bezostoja with 396.7 cm³/100g and 378.3 cm³/100g respectively. While the lowest volume was found in breads produced from Mirzabey wheat variety. Width, length and height of high-volume breads were also found higher than others. Crumb brightness, redness and yellowness of breads were varied between 64.6-70.1, -0.9-0.1 and 9.6-15.2 respectively. Highest crust redness and lowest crust brightness were observed at both breads produced from Sönmez 2001 and Bezostoja. Firmness of breads was changed between 1382-3175 g but a sharp increase in firmness (5240 g) were found at breads made from Gerek 79 wheat variety. Bezostaja and Yunak varieties were provided the breads softer than others. When the loaf volume, the height and the crumb firmness of breads are evaluated together, it can be suggested that Yunak and Bezostoja wheat varieties can be used to produce bread in satisfactory quality.

Keywords: bread wheat, firmness, quality, Lake District

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Effects of Different Sowing Dates on Seed Yield and Yield Components of Common Vetch (*Vicia sativa* L.) in Niksar/Tokat Conditions

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Abstract

This study was carried out to determine yield and yield components of common vetch which were sown at three different dates in the personal field in Gözpinar village in Niksar in Tokat in 2013. In the study, common vetch (*Vicia sativa* L.) was sown in 3 different dates as 10th February, 25th February and 12th March. In the research, Soner, Kubilay-82, Alper and Cumhuriyet-99 common vetch varieties were used as material. Significant differences were found among planting dates in terms of the number of seeds in pods, seed yield and 1000 seed weight. According to the results of the study, seed yield of varieties varied between 126-176 kg/da; 1000 seed weight between 62,8-70,7 g, number of seeds in pods between 3,91-4,11, number of pods per plant between 7,11-8,13 and secondary branch number per plant between 3,31-3,40. In Niksar/Tokat conditions, Alper common vetch variety should be sown between late days of February and early days of March.

Keywords: common vetch, *Vicia sativa* L., yield, seed

Botanical Composition and In Situ Dry Matter Degradability of Legume-Grass Mixture Pasture Fertilized with Different Amounts of Nitrogen

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Abstract

This study was conducted to determine the effects of different nitrogen (N) fertilizer levels on botanical composition, dry matter (DM) yield, chemical composition, in situ ruminal DM and neutral detergent fiber (NDF) degradabilities and metabolizable energy (ME) of a native legume-grass mixture pasture. Pasture was fertilized at six levels of N fertilizer (ammonium nitrate, N0, N50, N100, N150, N200 and N250 kg/ha). Three ruminally cannulated Holstein Friesian heifers (3-4 yr old) were used in this experiment. Results indicated that nitrogen fertilizer decreased the legumes ratio (LR) of pasture, approximately 22.4 %, Although N fertilizer increased the grass ratio (GR) of pasture approximately 55.8 % ($P<0.05$). Dry matter (DM) and ash contents of pasture were increased by increasing N fertilizer level ($P<0.05$). On the other hand, increasing N fertilizer level decreased acid detergent fiber (ADF) concentration of pasture ($P<0.01$). Nitrogen fertilizer had no effect on in situ rumen degradability of DM and NDF of pasture. It also was found that there was the significant positive relationship between effective NDF degradability at 48 h. rumen incubation period and different level of N fertilizer ($P<0.05$, $R^2=0.22$). In addition, it was determined that there was a linear and quadratic positive relationship between DM yield and different nitrogen doses ($P<0.05$, $R^2=0.248$). In conclusion, nitrogen application with different amounts changed botanical composition, decreased ADF content and increased effective rumen degradability of neutral detergent fiber ($ED_{NDF\ 48\ h.}$) of pasture.

Keywords: Botanical composition, Dry matter degradability, In-situ, Nitrogen fertilizer, Pasture.

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15-17 May 2017

Anthocyanin Profiles of Red Grape Juice From Different Varieties

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Abstract

The anthocyanin content is quite different among fruit species. The anthocyanin profile also differs among fruit species like the anthocyanin content. One of the most investigated fruit for anthocyanin profile and amount is red grape due to its attractive color. In addition, red grape anthocyanins are effective on the taste of the grape juice and wine. The purpose of this study is to determine the anthocyanin profiles of grape juice from different varieties and contribute to the understanding of importance of grape juice in diet.

Keywords: red grape juice, malvidin-3-glucoside, peonidin-3-glucoside, cyanidin-3-glucoside, delphinidin-3-glucoside, petunidin-3-glucoside

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Noodle Quality of Different Durum Wheat Varieties

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Abstract

Wheat flour noodles are an important part in the diet of many countries. In recent years, their popularity is likely to increase. Wheat flour is the main ingredient for making noodles. So all the quality attributes of them depend primarily on the characteristics of the wheat flour. In this work the effect of ten varieties of durum wheat flour on the noodle physico-chemical and textural properties was addressed. After determining grain characteristics, wheats were milled and used for noodle making. Noodle characteristics such as moisture, ash, total lipid content, color, breaking strength, deformation and texture profile analysis were measured. Furthermore, cooking time, solid loss, volume increase and water uptake percentage were performed on the cooked noodle samples in order to provide a more detailed view of their quality. Hectoliter and thousand kernel weights and hard grain ratio were found between 760-83.2 kg, 44.0-58.2 g and 62.00-97.33% respectively. Almost all of the wheat samples were found to be large and homogeneous. Hard wheat with the highest gluten and sedimentation values was taken first place while Kızıltan91 was last. Average brightness, redness and yellowness of cooked noodles was measured as 87.24, 1.26 and 17.54 respectively. Cooked noodles of Kızıltan91 were given the highest breaking stress (4.98 N/m²) and deformation (37.02 mm). Significant effects of wheat varieties on cooked noodle texture profile properties were observed in the study. Cooking time and solid loss was ranged 10.3-12.5 min and 7.85-10.39%. The greatest volume increase (259%) and water uptake percentage after cooking was determined at hard wheat and Gediz75 variety while the worst values (110%) were brought at Burgaz and Ankara98. Among the investigated samples grains, flours and noodles from the hard wheat and Gediz 75 varieties showed good characteristic, thus these varieties can be suggested for making handmade or commercial noodles.

Keywords: Noodle, textural, cooking time, volume increase, solid loss

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15-17 May 2017

Determination of Carbon Sequestration Using Remote Sensing

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Abstract

The forests, which are the most important natural resources of the place, are rapidly destroying with rapid population growth, industrialization and urbanization. Along with the destruction of forests as a result of land use change, environmental pollution, decline in biodiversity, climate change and global warming have also arisen. Forests reduce the amount of carbon dioxide in the atmosphere by the photosynthesis they perform, thus playing an important role in the global carbon cycle and storing about 80% of the carbon in the terrestrial ecosystem. The protection of forest areas and the increase of forest areas since most carbon forests are stored in terrestrial ecosystems are the most important solutions that can be used against climate change and global warming, which are the most important problems facing human beings in the last century. For this reason, by expanding forest areas that we need to increase the amount of CO₂ absorbed from the atmosphere. It is seen the importance of calculating the biomass production and carbon sequestration of forests determine the measures to be taken against global warming. Aim of this study is using remotely sensing data to determine the amount of carbon storage. Data is obtained from sample plots in Akçay Forest Management Chiefdom which is sub department of Vezirköprü Forest Operation Management in Amasya Regional Directorate of Forestry. BEF coefficients were used to calculate carbon storage in the stands. Landsat 7ETM+ image using determining carbon storage. Then, supervised classification was conducted on Landsat 7 ETM+ image using data obtained from sample plots. When restricted classification was carried, maximum likelihood was used.

Keywords: Remote sensing, Landsat, Carbon, Biomass

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15-17 May 2017

The Nutrition Status of Pomegranate Gardens (*Punica Granatum L.*) on Soils with Limited Conditions in Semi-Arid Southeastern Anatolia, Turkey

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Abstract

As the soils without limiting condition for plant growth is about 10% of the country's all arable lands, cultivation generally undertaken at soils with shallow, stony, sloping and deficient nutrient contents which is also valid for Adıyaman region. The pomegranate orchard establishment manifested a very rapid growth recently due various reasons alike subsidies however soil properties in the region is not well known. Soil and plant sampling were taken from 40 points for determination of plant nutrient and soil relations of pomegranate grown in soils with limiting properties in this study. Orchards were generally set 5 to 6 years ago with Hicaz variety. Soil samples were collected from 0-30 and 30-60cm depth, plant leaves were sampled during 20 August – 20 September period of the year 2015. Pomegranate soils have shallow-moderate depth (30-60cm) with alkaline pH, calcareous and clayey texture. While all orchards soils have high phosphorous and potassium content, the iron, zinc and organic matter were determined as insufficient. In case of leaf analysis nitrogen, phosphorous, potassium, magnesium, iron, copper and manganese were determined as sufficient while zinc was deficient. For example, excess bottom fertilizing particularly resulted phosphorous accumulation and it is determined that lack of decent knowledge on soil plant nutrient in the region induced zinc and iron deficiency. Soil organic matter was a disregarded property by farmers and its importance is not well-known by them. Finally, along with limiting soil conditions the inadequate nursing knowledge determined as constraining factor of Adıyaman pomegranate production.

Keywords: Pomegranate, plant nutrient elements, horticulture, limiting soil conditions

Water – Yield Relationship of Pumpkin Seed Irrigated With Different Irrigation Water Levels

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Abstract

This study was conducted to present the water-yield relationships of pumpkin seed plants under different irrigation water levels. Experiments were carried out in randomized blocks design with 3 replications over the experimental fields of Erciyes University in 2016. Irrigation scheduling was created through different irrigation water levels as to supply different portions of deficit water in effective root zone (I_{100} , I_{80} , I_{60} , I_{40} , I_{20} and I_0). While the highest yield was obtained from the full irrigation (I_{100}) treatment as 130.6 kg/da and the lowest yield was obtained from unirrigated (I_0) treatment as 42.7 kg/da. Water use efficiencies (WUE) varied between 0.188-0.242 kg/m³ and irrigation water use efficiencies varied between 0.278-3.285 kg/m³.

Keywords: Deficit irrigation, water use efficiency, irrigation scheduling

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15-17 May 2017

Effect of Chitosan Coating on Total Phenolic, Anthocyanin Content and Antioxidant Capacity of Sweet Cherry

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Abstract

Sweet cherries (*Prunus avium*) are quite perishable fruits. So its quality losses begin after harvesting and continue until reaching consumers. Therefore, proper packaging and storage is necessary for preserving the quality of sweet cherries. One of these is to coat sweet cherries with chitosan which is carbohydrate-based polymer. Sweet cherries were stored after coating with four different [Chitosan-1 (CH-1), Chitosan-2 (CH-2), Commercial-1 (C-1) and Commercial-2 (C-2)] chitosan solutions of %1 at 4°C for 25 days and changes in total phenolic, anthocyanin content and antioxidant capacity of sweet cherries were evaluated in five days period. At the end of the storage, the highest total phenolic content was 554,88mg/kg in the CH-2 coated cherries and the lowest was 451,00mg/kg in the control group. Both anthocyanin content and antioxidant capacity of sweet cherries increased throughout storage. Uncoated control group exhibited the lowest anthocyanin contents and antioxidant capacity at the end of the storage while CH-2 coated cherries had the highest anthocyanin contents as 595,62mg cyanidin 3-rutinoside/kg and C-2 coated cherries had the highest antioxidant capacity as 2,16µmol Tr/kg. In conclusion, each chitosan coatings are more effective than uncoated ones for maintaining the quality parameters of sweet cherries.

Keywords: Sweet cherries, Chitosan, Antioxidant capacity, Anthocyanin content, Total phenolic

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15-17 May 2017

Creating of Film Formulations For Sliced Apples: Sodium Alginate, Chitosan and *Stevia rebaudiana*

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Abstract

In this study, polysaccharide based sodium alginate (1, 1.25, 1.5, 2%) and polysaccharide based chitosan (0.5, 0.75, 1, 1.5, 2%) were selected as suitable film types at different concentrations and different dipping times (0, 15, 20, 30 min) were tried for the coating of sliced Amasya variety apples. In addition, they were combined with stevia extract (2.5%) which is completely natural, antimicrobial and antioxidant and film formulations are formed. Then, 2% ascorbic acid was added to the film solution to inhibit enzymatic browning. 1% glycerol was added as plasticizer for chitosan and for sodium alginate, different concentrations of glycerol were tested and positive results were obtained at 20% concentration. It was determined that 0.5% concentration is inadequate for film formation but 0.75% concentration is more feasible to use in film formation for chitosan formulations from the applied concentrations therefore, immersion times were not affected. For sodium alginate application, the best results were obtained at a concentration of 2% and a dipping time of 30 min, but it was concluded that 1.25% is ideal considering the applicability of stevia film formulations. In stevia combination films, chitosan combinations are more fluid than chitosan films, and sodium alginate combinations are more intense than sodium alginate films. This is thought to be due to pH changes. The sliced apples immersed in the appropriate concentrations after drying and they stored at +4 °C for 7 to 10 days. As a result, it was determined that coating process is necessary for sliced apples to prolong shelf life.

Keywords: Edible film, chitosan, sodium alginat, stevia, apple.

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Structural Effects of Using High Pressure Homogenization in Yogurt System

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Abstract

Homogenization is a physical process, applied in conventional manufacturing of market milk and yogurt, improving structural and functional properties. Milk fat globules of milk are originally in 1-10 μm diameter. By the effect of homogenization fat globules are broken down into smaller fragments in that way cream separation in market milk, cream and ice cream are prevented. Also surface area of surface active agents like milk proteins are also enhanced by homogenization. Valve-type homogenizers are widely used in conventional applications of dairy products. In yogurt production two-stage homogenization is applied to the yogurt milk. However, a novel homogenization technique called high pressure homogenization or microfluidization is introduced to the food and pharmaceuticals field. In high pressure homogenization droplet size of emulsions are controlled, more homogeneous and uniform structures are obtained in applied mediums. By the effect of high pressure homogenization, whey protein denaturation and disruption of casein micelles into smaller units occur and aggregation properties of casein micelles are enhanced. Since yogurt is a gel structure consisting of heat-denatured whey proteins and acid destabilized casein, high pressure homogenization also affects yogurt structure. Effects of this technology in yogurt texture, advantages and obstacles of use are revised in this article.

Keywords: High pressure homogenization, yogurt texture.

Determination of Some Properties in Drinkable Yogurt (Ayran) Produced with Honey

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Abstract

It is known that drinkable yogurt (ayran) has salty and sour characteristic, traditionally. In this study, flower honey, pine honey and mixed honey (mixture of flower and pine honey 1:1) were added to ayran. Ayran was produced by adding at two different rates (% 10 and % 20) of each type of honey (flower and pine) and mixed honey. Ayran samples were analysed as chemical and microbiological (lactic acid bacteria, total mezophilic bacteria) during storage periods (1., 10. and 21. day). In addition, sensorial properties of ayran samples (appearance, texture, taste, odor, overall acceptability) were determined. Total dry matter of ayran samples were changed from 14.789 % to 20.971 %. The titration acidity was found to be min 0.508 % and max 0.590 % during the storage period (% lactic acid). Pine honey's and flower honey's refractive index values were 82 % and 80.5 %, respectively. According to Tukey test, samples showed a significant difference for total dry matter ($P < 0.05$). But, there weren't a significant difference in % lactic acid, % salt, pH and % fat. Depending on time, samples didn't show a significant difference for dry matter, % fat, % salt. However, there were a significant difference in pH and % lactic acid ($P < 0.05$). All of Ayran samples exhibited thixotropic flow behaviour. And, according to power law model, ayran samples showed non-Newtonian flow behaviour (pseudoplastic), because flow index was less than 1 in ayran samples. As a result of the sensory evaluation, ayran samples with 10 % pine honey, 10 % mixture honey, 10 % flower honey, 20 % pine honey, 20 % flower honey and 20 % mixture honey were liked, respectively.

Keywords: Ayran, pine honey, flower honey, chemical properties, viscosity

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15-17 May 2017

Optimization Using Decision Trees Method in Multivariable Food Engineering Experiments and Its Sample of Applicability on Experiment Related with the Nisin Production of *Lactococcus lactis* N8

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Abstract

In this study, the ranges of independent variables resulting the optimum result of experiment should be selected was determined using decision trees method. Thus, the applicability of decision trees method has been proposed to food engineering experiments aiming the optimization. The sample application of the decision tree method proposed in the study was performed in the experiment aiming optimum nisin production of *Lactococcus lactis* N8. According to the findings obtained from the sample application it was observed that the decision trees method determines both optimum variable values and their tolerance ranges. Furthermore, the method proposed was not only determined the optimal ranges of variable values also it was determined the variable ranges for all possible experimental results. Accordingly, at the end of the study, advantages of the proposed method were explained by comparing with similar methods and how the experimental design should be to make the method more effective was proposed.

Keywords: Decision Trees, Optimization, Modelling, Prediction, Nisin Production



Investigation of Some Biochemical Changes in Dinçer and Remzibey Aspir (*Carthamus tinctorius*) Cultivars Expose to Pendimethalin Herbicide

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Abstract

Pendimethaline herbicide was applied to Dinçer and Remzibey cultivars of *Carthamus tinctorius* in postemergence in a concentration range between 0.004-0.01 M. In treatment groups, chlorophyll a, chlorophyll b, carotenoids, total chlorophyll, malondialdehyde (MDA) content indicating lipid peroxidation and protein change were investigated. Pigmentation analysis was described by De Kok and Graham (1980). The absorbance values of the centrifuged samples were measured as described by Lichtenthaler and Welburn (1983). MDA analysis was performed by following Heath and Packer (1968). Statistical analysis was described using SPSS 15.0 software. Duncan's test was used for significance control ($P < 0.05$) following variance analysis. Protein electrophoretic analysis was carried out SDS-PAGE. Chlorophyll a, chlorophyll b and carotenoid content showed a decrease in Dinçer and Remzibey in 24, 48 and 72 hours when compared to the control. Total chlorophyll content was significantly higher in Remzibey than Dinçer. MDA content was higher in Remzibey than Dinçer. Protein concentration change was independent in Dinçer while dependent in Remzibey in 24 hours. Concentration independent change was observed in samples of 48 hours. With the sequencing and bioinformatics studies made, the protein which showed change is thought to be omega-3 fatty acids desaturase enzyme which catalyze double bond formation of omega-3 fatty acids; an important structural molecule for vegetable oil production and human fat diet.

Keywords: Herbicide, chlorophyll, carotenoid, malondialdehyde, protein



Isolation, Partial Purification and Determination of β -glucosidases Activities of Some Apricots During Maturation

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Abstract

Apricot (*Prunus armenica* L.) is one of the most popular of the temperate fruits worldwide and is cultivated in all Mediterranean countries, South Africa as well as South and North America. Apricot fruits are of agronomic importance for Turkey. Turkey is the world leader in fresh and dried apricot production. Apricot production is predominantly based in Malatya province which is the major ecological zone in Turkey for cultivation. It has been reported that important flavour compounds in many fruits are glycosylated and they accumulate as nonvolatile and flavourless glycoconjugates. These glycosylated conjugates are considered to be potential aroma from which volatiles can be released by enzymatic or chemical hydrolysis during maturation, industrial pretreatment or processing of fruits. Flavor enhancement by glucosidases have been the focus of much research. β -glucosidase (β -D-glucoside glucohydrolase, EC 3.2.1.21) catalyzes the hydrolysis of the β -glycosidic bond between two glycone residues (e.g., cellobiose and other β -linked oligosaccharides) or that between glucose and an aryl or alkyl aglycone. There are several hundred different β -glycosidic flavour precursors identified from plants which indicate the presence of β -glucosidases in plant tissues that hydrolyze these flavour precursors. Thus, in each case there is a need for isolating and characterizing the specific enzyme that hydrolyzes a β -glucoside whose aglycon moiety is of interest to food quality and processing. Such biochemical data are crucial to making practical decisions as to whether or not enzymes from host plants or other sources should be added to drinks and beverages before, during, or after processing to enhance flavour, aroma, and other quality factors. The aim of this study was to partial purification of β -glucosidase and determination β -glucosidase activities from Alyanak, Hacıhaliloğlu and Kabaası apricots during maturation in two consecutive years. In conclusion the activities of β -glucosidase continuously decreased with maturation.

Keywords: Apricot, purification, β -glucosidase

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15-17 May 2017

Traces on Urban Spaces of Changing and Transforming Shopping Culture in İstanbul

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Abstract

Shopping needs and culture at the center of urban life have left a mark in the urban space as karums, agoras, forums, fairs, inns, caravansaries, covered bazaars, closed bazaars and shopping centers under the influence of changing and transforming human needs throughout history. Economic and political developments that have taken place together with the globalization process are the main factors playing a role in the realization of physical transformations and changes in the urban spaces. These changes and transformations have led to adversely affected urban identity and dissolution of the existing urban fabric. The study area was determined as İstanbul where shopping culture that is one of the main standardization urban spaces in the world society where shopping culture is converted into consumption culture, have been increasing rapidly. Within the scope in this study, Local analysis based on the proximity and density of today's shopping centers in İstanbul. As a results of this study will guide the taking of land use decisions for İstanbul and its revealed that the changing and transforming spatial uses of the cities.

Keywords: Urban space, Public space, Shopping center

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15-17 May 2017

The Use of Satellite Images and Data from Drones to Forecast Agricultural Production and Crops Recognition.

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Abstract

The first part of the speech will present a study of the data acquired from a drone approach for the purposes of assessment of production from grasslands. The work was developed in cooperation with the Department of Agriculture in the Central Statistical Office and the Institute of Geodesy and Cartography in Warsaw in 2015. The analysis was conducted on 21 plots with total area of approximately 460 ha of permanent grasslands in the selected voivodships. It is planned to describe the methodology of the research consisting in using non-piloted measuring platform (a drone) equipped with a hyperspectral camera. The collected information about the crop yield from grasslands were compared with the local estimates of experts. A SWAT analysis will be also presented, summing-up the conducted research and assessing the potential of the used method. The second part of the speech will present the results of cooperation between the Department of Agriculture in the Central Statistical Office and the Space Research Centre of the Polish Academy of Sciences in Warsaw. It will be concerned with the possibility of distinguishing particular groups of crops and classes of land cover, including identification of selected crops on the basis of satellite images (taken by Sentinel 1 & 2 from Copernicus programme) to the lowest possible level of aggregation. Such research was conducted on a selected Polish voivodships in 2015 and 2016 and covered approx. 2.8 million hectares of agricultural land. The speech will present the applied method of sample selection (ca. 2500 measurement points) based on administrative sources of the Land Parcel Identification System, the field survey of crops in that area and the adopted methodology of identification of crop group based on satellites data.

Keywords: Satellite Images, Crops Recognition, Agricultural Production, Drones

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15-17 May 2017

The Effect of Dipel and Spruzit Against *Metcalfa pruinosa* (Say, 1830) (Hemiptera: Flatidae)

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Abstract

Metcalfa pruinosa is an important damaging insects of most plants in Black Sea Region of Turkey. The pest which feeds on hundreds of products by absorbing their juice saps as well as posing danger in the coastal parts of the Eastern Black Sea Region of Turkey. This work has been done for the purpose of creating a complete struggle strategy against *Metcalfa pruinosa* (Say), which is the cause of the damage in Artvin - Kemalpaşa sea side areas in the recent years and Dipel and Spruzit Neu biopesticides effects has been investigated and put into practice on the *M.pruinosa*. During the summer months of 2016, the period when nymphs and adults are found profoundly in the city of Artvin. Under laboratory conditions, Spruzit Neu (Pyrethrum) and Dipel DF (*Bacillus thuringiensis*) biopesticides were administered at different doses (DiPel® DF BT 100gr/100lt, DiPel® DF BT 300gr/100lt, DiPel® DF BT 500gr/100lt and Spruzit® Neu 150ml/100lt, Spruzit® Neu 300ml/100lt Spruzit® Neu 600ml/100lt) to the nymph and the adult stage and the results were evaluated according to the One-way analysis of variance (ANOVA) and Duncan Test. It was determined that the most effective practices for nymphs would be through the use of Dipel DF 300 gr/100lt and 500 gr/100lt; whereas the most effective practices for adults would be through the use of 600ml/100lt Spruzit Neu and 500gr/100lt Dipel DF. The most commonly-seen efficiency rates were determined to be 72.5% with 600ml/100lt dose of Spruzit Neu and 80% with 500gr/100lt dose of Dipel DF. The impact rate of the biopesticides performed against the adults, on the other hand, was found to be 78% with 600 ml/100lt dose of Pyrethrum and 75% with 500 gr/100lt dose of Dipel DF. Consequently, both of the bio pesticides used were determined to have been effective on both the nymph and the adult stage of *Metcalfa pruinosa*; yet, it was concluded that the struggle in question would be more appropriate during the period of nymphs.

Keywords: *Metcalfa pruinosa*, Biopesticides, Spruzit, Dipel, Artvin-Turkey

A preliminary study on the yield and some agronomical performances of Aztec tobacco (*Nicotiana rustica* L.) grown under different ecological conditions in Turkey

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Abstract

Aztec tobacco or wild tobacco (*Nicotiana rustica* L.) is introduced in the southern part of México. Its leaves are wider and rounder than some tobacco species. All parts of the plant contain nicotine, this has been extracted and used as an insecticide. The plant contains up to nine times more nicotine than common species of *Nicotiana tabacum* L. The dried leaves of *N.rustica* L. can also be used, they remain effective for 6 months after drying. The leaves have also been dried and then chewed as a stimulant or made into snuff for sniffing, or smoked. *N.rustica* L. is more potent than *N.tabacum* L. Information on the productivity and quality of *N.rustica* L. under intensive farming management in Mediterranean environment is not well documented. This study was to examine the adaptation, yield and some other agronomical characteristics of Aztec tobacco plant (*Nicotiana rustica* L.) grown under different ecological conditions in Tire-Izmir and Karacabey-Bursa province in summer crop production season in 2015 in Turkey. Some traits were evaluated in the experiments such as plant height (cm), number of leaves (per/plant), fresh and dry leaf yields (g/plant), crude ash (%) and nicotine (%) content. One year results indicated that *N.rustica* L. adapted very well and grown easily in both conditions. Plant height varied between 48-73 cm and 82-108 cm in Tire and Karacabey conditions, respectively. Minimum and maximum dry leaf yield were 6 g/plant and 20 g/plant in Tire, and 16 g/plant and 42 g/plant in Karacabey, respectively. Average nicotine contents found 5% in Tire and 8% in Karacabey.

Keywords: *Nicotiana rustica* L, ecology, adaptation, leaf yield and nicotine content



Knowledge Transfer Activities Support Food Businesses of Traditional Smes

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Abstract

The aim is to describe an effective model of knowledge transfer activities on participating European traditional producers, small and medium-sized enterprises (SMEs) under the EC-FP7-KBBE-TRADEIT-project. The nine hubs successfully delivered their planned localised and customised training in Finland, Germany, Ireland, Italy, Poland, Portugal, Spain, and the UK. Additional workshops were delivered based on emerging needs of the SMEs as identified through feedback from the companies and through the case studies. In total, 60 training events were run across the nine hubs. 1178 participants attended these events of which 866 were SME food producers. The participants were food producers, other food business operators, food associations, academic researchers, students, funding agencies, food safety inspectors, policy makers etc. This provided a vibrant atmosphere, and facilitated transfer of knowledge in different formats and from diverse and relevant perspectives. Feedback from the SMEs has been very positive overall. Knowledge transfer was an integral part of the formation and consolidation of the Europe wide network, as it provided an opportunity for the food companies to meet frequently and engage with each other, as well as with the trainers and hub advisors. Hub advisors were key facilitators in the knowledge transfer activities, providing local and regional knowledge to critical insights to the needs of the SMEs. Flexibility and adaptability was required to respond to the SMEs, in particular to deliver the training when the food companies were generally constrained by extremely busy schedules. The module topics were highly relevant. The companies benefitted from the training events, as demonstrated by the survey conducted after completion of the workshops. The high standards and professional approach taken by module developers and trainers was especially appreciated, with mainly positive feedback from each event. The knowledge transfer actions will continue via the on-line training units and rich repository of localised training resources.

Keywords: Food industry, SME, knowledge transfer, model



The Above-Ground Biomass of Beech (*Fagus orientalis Lipsky.*) Stands in Ordu-Akkuş Region

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Abstract

The increase in energy consumption, along with the developing technology and the increasing population, makes energy requirement as an important problem in our country as well as in the whole world. This energy problem is being met with fossil energy resources such as petroleum, coal, and natural gases, which have been used intensively since the past. In the near future, however, fossil energy sources will be unable to meet this need. In this case, renewable energy resources should be identified along with non-renewable resources and they should be come in to use. Until today, biological sources are at the forefront of renewable sources used for energy production. The most important biological resources used for energy are woody materials in the forest ecosystem. Biomass is an important source of energy with respect of being the fourth largest source of energy in the world. As a result of all this, biomass studies have been given great speed in the world to meet the energy deficit. In this study, the amount of biomass above- ground of beech forests in Ordu-Akkuş region, where optimum spreading was observed in Turkey, was determined.

Keywords: Renewable energy, Biomass, Regression analysis

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Determination of Temporal and Spatial Change of Land Use in Vezirköprü Dam Using Remote Sensing

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Abstract

The boundaries of forests that are important natural resources; Natural disasters or various activities that are caused by human beings. In order to be able to plan the forests according to the principle of sustainability, it is necessary to establish the reasons for these changes in the forest structure. Change detection is the process of identifying differences in the observed events or situations of the objects at different times. It is possible to make the right decisions in order to solve the problems that will be encountered in the meaning of the change of the Earth and the result of change, and to obtain and interpret the healthy and fast data about the earth. Remote sensing and Geographic Information Systems are emerging as important tools in the process of detection and analysis of such changes. Examination of temporal changes in natural resources will provide planning support in the coming years. It is important that planners know the reasons for the change in the forest during the decision making stage. Along with the rapid increase in the human population, the patterns of land use resulting from irregular use of forests are changing, and accordingly the level and amount of water yield and quality expected from natural ecosystems are changing. Aim of this study were used Landsat data topographic maps and the two plan periods of the Vezirköprü dam basin between 1984-2016. As a result of this to determine patterns of land use, the temporal and spatial changes in land use were tried to be calculated and the causes of change were tried to be revealed.

Keywords: Land Use, Geographical Information Systems, Forest Management, Remote Sensing, Temporal Change,

Biogenic Amine Risk In Fermented Foods

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Abstract

Fermented food products are generally considered as safe. However lactic acid bacteria in fermented foods can produce biogenic amines having negative effects on both food quality and human health. Biogenic amines are low-molecular-weight organic, basic, nitrogenous compounds, mainly formed through decarboxylation of amino acids. Histamine, putrescine, cadaverine, tyramine, tryptamine, 2-phenylethylamine, spermine, and spermidine are the most important biogenic amines in fermented foods. These compounds can accumulate in high concentrations in food due to decarboxylase activity of lactic acid bacteria and cause toxic effects in consumers. All bacterial strains do not carry these activities but the presence of biogenic amine-producing strains in fermented foods is a risk for consumers. Decarboxylating strains of *Lactobacillus curvatus*, *Enterococcus faecalis*, *Enterococcus faecium*, *Lactobacillus fermentum*, *Lactococcus lactis*, *Streptococcus thermophilus* and *Lactobacillus paracasei* were isolated from various fermented food products such as cheese and sausage with high BA content. The main factors influencing the production of biogenic amine in fermented foods are growth kinetics, strains, proteolytic and decarboxylase activities of microorganisms. The degree of biogenic amine intoxication depends on the amount and type of biogenic amine. To prevent risk from these compounds, it is essential to obtain information about the potential production of biogenic amines by the microorganism present in fermented foods. The aim of this review is to present detailed information about risk and occurrence of biogenic amines resulting from the metabolic activities of lactic acid bacteria in fermented foods.

Keywords: Biogenic amine, fermented foods, lactic acid bacteria



The Determination of Performance of Some Hybrid Corn Varieties Grown in Ceylanpınar Agricultural Enterprise

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Abstract

This research was aimed to determine varieties of superior to the conditions due to the yield, plant length and tassel day, quality characteristics of as the second hybrid corn varieties, thirteen hybrid maize varieties late-maturing (FAO 690-700) grown in both Beyazkule and Karataş of Ceylanpınar district of Şanlıurfa Province. The experiment design was the completely randomized block with four replications. According to the results of the trial, green silage yields were significant differences between of both corn varieties and localities. The average yield of maize varieties was 6145.1 kg/da in the Beyazkule location and 4454.8 kg/da in Karataş location. The average corn yield of corn cultivars was 4558.0-5897.0 kg/da, the plant length was 273.6-316.9 cm, and the number of male flowering days was 52.4-64.4 days. As a means of both locations, the highest yield varieties were 31Y43 (5897.0 kg/da), ALİCE (5808.4 kg/da), and the lowest produced variety SASA-40 (4558.0 kg/da).

Keywords: Silage Corn, Yield, Variety, Agricultural properties



Extraction, Partial Purification and Determination of Inhibitors Effects of Polyphenol Oxidase from Tea Leaf (*Camellia sinensis*)

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Abstract

Tea is one of the world's popular beverages and is produced from the tender, rapidly growing shoots of the tea plant (tea flush) or tender young leaves. It is classified according to the process of manufacture as fermented tea (black tea) and non fermented tea (green tea) . It is estimated that about 2.5 million metric tons of dried tea are manufactured annually, of which about 78% is black tea. Polyphenol oxidase (PPO) plays a key role in the oxidation of flavanols to black tea components such as theaflavins and thearubigins. It catalyses the crucial initial reaction during tea fermentation, the oxidation of *o*-diphenols to their corresponding quinones, which are then spontaneously transformed to more complex fermentation products. Only the tender shoots of the plant are processed. The shoots are a rich source of polyphenols and PPO. The enzyme is found in all parts of the plant, and tea quality is positively correlated with its content in the shoots. Turkey with an annual tea production of 227000 tonnes which constitutes 4.5% of world tea production is an important tea producer along with are India, China, Sri Lanka, Kenya. Turkey with 2.3 kg tea consumption per capita is the 4th biggest tea consumer in the World. The aim of this study was to extraction, partial purification and determination inhibitors effects of polyphenol oxidase from tea leaf. Effects of cysteine, ascorbic acid and sodium metabisulfite on tea polyphenol oxidase activity were studied at various concentrations using catechol as the substrate. In conclusion, of the inhibitors tested, L-cysteine was the least potent inhibitor.

Keywords: Tea, purification, polyphenol oxidase, inhibitors, PPO

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The Effect of Sand and Perlite Mix Ratio and Level of Salt (NaCl) on The Growth and Development of *Sarcocornia perennis*

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Abstract

Salinity is one of the environmental stress factors that significantly limits the production of food products by endangering world' productive agriculture. Approximately 6% of the surface area of the world is faced with problems of soil salinity. Turkey has salinity and alkalinity problems in nearly 1.5 million hectares of its lands. The halophyte plants have the potential for growth and development even if the salty soil and salty irrigation water are used. For economic farming in saline soil, the production of plants grown in salty areas will provide high benefit to the producers and the economy of our country. *Sarcocornia* is known as a halophyte plant that can survive in high salinity conditions. The main objective of this study sand-perlite mixture ratio and the salt level is to determine the impact on the growth and development of *Sarcocornia*. On different rate sand-perlite (0%, 25, 50, 75, 100) and four different salts (NaCl) level (0-200-400-600 mm) taken to experiment in the culture room. Fresh weight, stem height, stem diameter, nods length, number of lateral branches and root length were determined as a growth parameter in the plant. The data were subjected to analysis of variance (ANOVA) using factorial randomized complete plots designed with three replications. The research results revealed that tolerated salinity up to 600 mM NaCl; but the optimum growth was at 200mM NaCl. At 200 mM NaCl and % 100 perlite growth medium, *Sa. perennis* plants were recorded the highest fresh weight per plant (g/plant), the highest stem height, highest stem diameter, the tallest node, the highest number of lateral branches, and the tallest root. According to the data obtained, in the samphire cultivation has appeared that seawater can be used as irrigation water.

Keywords: Samphire, Fresh weight, Stem height, Stem diameter, Shoot number, Seawater

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Estimated Intake of Acesulfame Potassium and Aspartame from Soft Drinks, Foodstuffs and Pharmaceuticals

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Abstract

Due to medical need for diabetes and obesity, intense sweeteners are widely used in drinks and foodstuffs. Besides that, people increasingly choose low-calorie products to reduce their calorie intakes for esthetic worries. Pharmaceuticals are also contains intense sweeteners as taste-maskers. However, debates about safety of these additives have been going on for years. Because of the risk of exceeding ADI levels, calculation of the intake of this kind of additives is important to evaluate the safety of them. Acesulfame potassium and aspartame are commonly used as intense sweeteners in various drinks, foodstuffs and pharmaceuticals. In this study, estimated intakes of acesulfame potassium and aspartame were calculated by using the approximate sweetener contents of the drinks and food products in portions and pharmaceuticals in dosage forms. The sweetener contents of products were determined by performing analytical procedures. The estimated intakes were divided by diverse body weights and the results were compared with the ADI's.

Keywords: Acesulfame potassium, Aspartame, Intense sweeteners, Estimated intake.



Stomatal Parameters and Growth Responses of *Nicotiana* and *Atriplex* to Cd, Pb and Cd–Pb-Contaminated Soil

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Abstract

Stomata are the pores which surrounded by two guard cells which play an important role in regulation of plant water balance and gas exchange between plant internal tissues and the atmosphere. In this study, the probability of stomata role in increasing the accumulation of Cd while applying Cd-Pb together to the soil was studied in *Artiplex* species and Tobacco varieties. Therefore, the growth and stomatal parameters of *Nicotina* and *Artiplex* was studied under the treatment of Cd, Pb and Cd-Pb. In addition, the probability existence of differences and similar trends between plant responds to different application of heavy metals was compared. All Cd, Pb and Cd-Pb treatments has led to decrease in biomass and of both plants. On the other hands, the Cd, Pb and Cd-Pb treatments had effect on increasing the number of the stomata in both plants, and the stomata density was achieved to the maximum level in Cd-Pb treatment. It can be interpret that the increase of stomata in plant might be used as a method to alleviate the effects of heavy metal stress. It is also obvious that in compared to other stomatal parameters the stomata number is reliable and useful tool for determining the accumulation level and transport of heavy metal in plant.

Keywords: phytoremediation, stomata, tobacco, cadmium (Cd), lead (Pb)

First record of the hosts and damage of *Chilo partellus* (Swinhoe) (Lepidoptera: Crambidae) in the East Mediterranean region of Turkey

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Abstract

This insect was first reported in maize areas in Adana and Hatay provinces in the East Mediterranean region of Turkey in 2014. *Chilo partellus* (Swinhoe) (Lepidoptera: Crambidae) is an invasive insect species attacking maize (*Zea mays* L.) and sorghum causing important yield losses. The species is native to Asia and distributed to southern and eastern Africa. This study was conducted in the second crop maize and sorghum in Adana and Hatay provinces in the years of 2014-2015. The aim of this study was to determine the alternative hosts and damage of *C. partellus*. The study was conducted in two second crop from maize fields in both of the years between July and September. Sorghum bicolor, *S. halepense* were identified as the hosts of *C. partellus* besides *Zea mays*. It was determined that the first stage larvae of *C. partellus* damages its hosts by feeding on leaves especially first on the surface then in the middle vein. Later, larvae tunneled within the stalk, entered into the stem and feeding on the growth funnel causing the deadhearts. Furthermore, its feeding on the tassel damages it and prevents pollination. *C. partellus* has spread rapidly in the maize fields in the Eastern Mediterranean Region of Turkey.

Keywords: *Chilo partellus*, maize, sorghum, Adana, Hatay, Turkey

Determination The Effects of Rain on Cotton Fiber Quality Characters

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Abstract

Climate conditions and environmental factors are the most effective factors that limit cotton production. Precipitation both at sowing time and at harvest time, limits cotton production season. Precipitation during planting and harvesting decreases yield and quality (Silvertooth, 2001 ve Krieg, 2002). The study aims to determine the effect of different amounts of rainfall at harvest time on fiber quality characteristics of some cotton varieties which are mostly planted in Aegean Region. The study was conducted in the trial area of the Nazilli Cotton Research Institute in 2013 using 9 cotton varieties Carmen, Özbek 105, Gloria, Claudia, ST 468, ST 373, Flash, Carisma, GSN 12 by randomized block design with four replications. An average of 14.5 mm at 13 periods and totally 188 mm rainfall was observed. It examined the effect of precipitation on fiber quality characters. Fiber quality characters were observed in each period. The results were evaluated by using regression analyzes. The study suggest that the increase of precipitation caused raised color grade and trash count but decrease in fiber yellowness (+b), fiber reflectance (rd), fiber length, fiber strength, uniformity.

Keywords: Cotton, fiber quality characters, precipitation.

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GAP Project Agriculture Potential and The Importance of Soil, The Use of Soil

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Abstract

The GAP region corresponds to about 10% of our country in terms of area and population. However, it has 20% of the total economically irrigable area in the country as a whole. Together with the Euphrates and Dicle rivers constitute 28% of the total water potential of Turkey. The area covering 9 provinces in the south-east of Turkey is referred to as the GAP region and it constitutes 9.7% of the country with an area of 75.193 km². GAP is a very important project for the future of our country. When all components of the GAP are completed; 1,82 Million hectares will be opened to irrigation, 27 billion kWh of electricity will be generated per year. The total employment opportunity in the GAP region will be increased to 3.8 million people and a 209% increase in per capita income will be achieved. Harran Ovası, which is mostly completed within the scope of the GAP Project, is an important experience. In order to prevent the same problem from the other ovals that will start irrigated agriculture, it is beneficial to make the pre-irrigation sub-structure according to it, to initiate training studies and to direct the farmers by making product design plans. Otherwise, some of the negativity in the Harran Plain can also be experienced from other plains. While there are positive investments and recoveries in the energy, social, health and agricultural areas in the GAP area, the lands lose their yields because they are not used according to their abilities. The consequences of not being applied in the region are rapid construction and misuse of agricultural lands. Briefly, in the GAP region where significant expenditures are made, special agricultural policies should be established and monitored especially in agricultural areas.

Keywords: GAP Project, Soil, Economy, Irrigation.



In vitro Culture Studies on Woody Plants in Turkey

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Abstract

The production of woody plants is very important in terms of sectors such as forestry, fruit and ornamental plants. Problems such as the seed production, elimination of seed germination barriers and obtaining of healthy production materials are seen in productions made with classical techniques. By using *in vitro* techniques, it is possible to obtain a great number of disease-free, clone and cheaper plants in a short time. In addition, the duration of the new plant variety breeding is considerably shortened by these methods. For this reason biotechnological methods are used more frequently nowadays. In Turkey, it is seen that tissue culture studies on woody plants are increasing every year. In this study, *in vitro* culture studies on forest, fruit and ornamental trees and shrubs were investigated in Turkey. In these studies, apical and lateral buds, mature and immature seeds, embryos, cotyledons, internodal stem segments and leaves obtained from woody plants were used as explants. Techniques such as meristem culture, direct and indirect somatic embryogenesis, embryo culture, axillary shoot multiplication and callus culture are the most frequently used techniques. In these tissue culture studies, it is determined that MS, WPM, LS, B5, DKW, DCR and Heller nutrient medium were frequently used directly or modified. Many studies have reported unsolvable problems in the formation of shoots and/or root formation. In addition, the survival rates of plantlets obtained in some other studies are not at the desired levels during acclimatization. The most important result that comes to mind in this examination, which is expected to be a light on the further work to be done in this area, is the tissue culture studies of woody plants in our country are limited and most of these studies are still far from being an efficient plant production method.

Keywords: Biotechnology, Tissue Culture, Forestry, Fruit Crops, Ornamental Plants

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Using of Slow Growth Storage Technique in Short and Medium Term Germplasm Conservation

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Abstract

The conservation and sustainability of plant biodiversity is very important for the whole world population. Nowadays, in addition to the classical methods used for the germplasm preservation of agricultural, medical, aromatic, ornamental and endangered plants, biotechnological techniques offer important approaches. Thanks to biotechnological methods that allow us to propagate and store plants in short and long term at in vitro, both germplasm is preserved and continuous cultures are kept ready for sustainable plant production. Slow growth storage is one of prominent technique that allows us to protect the biologic material from several months to a few years effectively. The growth rate of plant material can be slowed down by decreasing the temperature and light intensity of culture conditions, adding some osmotic components or growth retardants to the medium and reducing the concentration of nutrients and carbon source in the medium. Contamination can be reduced with this technique, which is based on the extension of intervals between the subcultures. Any in vitro culture material such as seed, callus, anther, shoot, root or whole plant may be used in this technique. In this study, the application of this technique which is observed in a small number of researches in Turkey has been explained and its advantages and disadvantages have been discussed.

Keywords: *In vitro*, Plant Biotechnology, Protection of Biodiversity, Minimal Growth

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Evaluation of Goat Milk and Its Products as Functional Foods

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Abstract

Goats, which were domesticated approximately 11000 years ago, are globally bred for fibers, meat and milk. Goat breeding is widespread in underdeveloped countries due to lower costs and sustainability of production. Goat milk is an alternative to cow milk with differences in protein chains that triggers decreased allergenic reactions, easy to digest and lower trans C18:1 fatty acid composition. Goat milk is distinguished from cow milk with its unique protein chains and fatty acid composition which is easily digested than cow's milk. Goats milk is more consumable for infants with its closer composition to human milk. Acid buffering phosphorus, calcium and sodium content and protein structure of goat milk helps recovery of peptic ulcers. Intolerance and allergies against cow's milk is a rare case for goat milk. Probiotic bacteria like *Lactobacillus acidophilus*, *Bifidobacterium bifidum*, *B.infantis*, *B.lactis*, *Enterococcus faecalis* survive longer in goat milk. It is shown that goat dairy products are additional value during the recovery of asthma, hemorrhoids, and eczemas.

Keywords: Goat, Goat milk, Probiotics, Functional food.

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Investigation of Maternal Effects on Fecundity and Survival of *Planococcus ficus* (Hemiptera: Pseudococcidae)

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Abstract

The vine mealybug, *Planococcus ficus* (Signoret) (Hemiptera: Pseudococcidae), is a key pest of grapevines and can cause severe crop losses in grape cultivars. There are very limited studies about its biology. Life tables give us an brief life history of an organism. It is important tools for comparisons of the populaton potential under the different conditions like these, different hosts, varieties, temperatures, mother ages, sexes, and localities, etc. It is an an important tool in comparing populations under different conditions such as hosts, varieties, temperatures, mother ages, sexes and locations. In this study, maternal effects of the vine mealybug were investgated on development, fecundity, longevity, generation time, oviposition periods and survival. At the experiments, four different populations, individuals were obtained 1, 10, 15 and 20 days mother ages, were used. Every experiment group had 30 replications and grapevine leaves were used for experimented individuals. All experiment were carried out at climatic cabinets that have 25±1 °C temperature, 65-70% relative humidity and 16:8 h day light period. Raw data that were obtained at every experimented group were analysed according to age-stage-specific two-sex life table. End of the study, life table parameters of *P. ficus* for every age group populations were found as; intrinsic rate of increase (r_m) 0.09, 0.080, 0.085 and 0.080 d⁻¹, net reproductive rate (R_o) 71.6, 28.70, 40.68 and 37.60 d⁻¹, mean generation time (T_o) 46.34, 41.47, 43.39 and 44.85 days, gross reproductive rate (GRR) 198.98, 63.95, 82.55 and 75.86 d⁻¹, finite rate of increase (λ) 1.09, 1.08, 1.08 and 1.08 d⁻¹, respectively. According to development, fecundity, survival and calculated life table parameters, first age group population was found higher population dynamic features than old age group populations.

Keywords: Age-stage-specific life table, Grapevine, Mother age, *Planococcus ficus*



Effects of Different Irrigations Systems and Irrigation Regimes on Yields of Silage Corn Production (*Zea mays* L.)

Bilal KESKİN, The Effects of Different Seed Quantities and Cutting Times on Quality, Süleyman TEMEL, İbrahim HOSAFLI

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Abstract

The aim of this study was to evaluate the effects of different water quantities of furrow and drip irrigation systems on the corn yield and yield components under Iğdır conditions. Irrigation water amounts used were; 25%, %50, %75, and %90 of available water capacity. Significant differences were between both irrigation systems and quantities of water on yield and yield parameters; plant height, green herbage yield, leaf ratio, cob ratio, stem ratio, dry matter yield, crude protein yield and plant weight. It was concluded that plant height (196.7-276.7 cm), green herbage yield (4269.8-12925.9, kg/da), cob ratio (%1.13-1.60), leaf ratio (%12.7-19.5), stem ratio (%41.1-69.2), dry matter yield (2220.9-4513.6 kg/da), crude protein yield (%4.77-6.91) and plant weight (583.3-1550.0 g). The drip irrigation system had the more effect on the plant height, leaf ratio, cob ratio, dry matter yield compared with furrow irrigation, crude protein yield and plant weight. It was also observed that the highest values of investigated characters except for leaf and stem ratio were obtained from irrigation water amount of %25-50 deficit at the end of the trial. As a result of the experiment, the highest green herbage yield (FISxI25), dry matter yield (FISxI25-I50), ear number (FIS-DIS xI25-I50) and stem ratio (FISxI75) and the lowest values of both in FIS and DIS at I75-I90 treatments were observed in silage corn production. Consequently, It will be most appropriate to have irrigation of 25-50% field capacity in terms of ecological balances, the soil salinity and shortage of the water resources in both irrigation methods in general.

Keywords: Silage corn, irrigation systems, yield and yield components

Simultaneous Determination of Acesulfame Potassium, Saccharin and Aspartame in Beverages by HPLC-DAD

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Abstract

An analysis method for the chromatographic separation and determination of acesulfame potassium, saccharin and aspartame in beverages was developed using high performance liquid chromatography-diode array detection (HPLC-DAD). Analyses were performed under gradient elution conditions using a C₁₈ bonded core-shell silica particle column. Mixture of water, phosphate buffer (0.025 M, pH 3.0) and acetonitrile was used as the mobile phase which was pumped at 1.0 mL/min flow rate. The analytes were detected by a photo-diode array detector at 210 nm wavelength. Quantification was performed using matrix-matched calibration. To confirm the suitability of the method several validation parameters such as accuracy, precision, limit of detection and quantification, linearity and ruggedness were evaluated. The proposed method has been successfully applied on various beverage samples by using dilute-and-shoot technique as 5 µL aliquots. The results were examined statistically and levels of sweetener in samples were assessed in terms of legal limitations.

Keywords: Sweetener, HPLC-DAD, Beverage analysis, Matrix-matched calibration.

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The Assessment of Earliness Related Morphological Characters in Cotton Germplasm

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Abstract

Earliness in cotton cultivation is a very important approach. Undesirable environmental conditions, cold weather conditions, insects, roundworm, pesticide decrease, reduce economic value and production amount. Using earlier varieties can tolerate undesirable environmental conditions. The experiment was designed in two different location (Kahramanmaraş and Diyarbakır) using augmented experimental design and genotype x location intraction was determined. 96 cotton genotypes are supplied from Kahramanmaraş Sütçü İmam Universty Agricultural Biotechnology Laboratuary germplasm collection and the morphologic earliness characters were measured. BA119, Stonville 468 and TEKS varieties are used as a standart in our study. Nine diffrent earliness related characters, date of first square, date of first flower, date of first bool formation, date of opening bool, number of first node sympodial branch, number of monopodial branch, number of fruit branch, first fruit height and number of bool are observed and measured for both location. The variance analyses showed significant differences between earliness characters for each genotyps ($p < 0.01$). Results compared with standart varieties indicated that PRIMERA, FANTOM, CARISMA, GLORIA, NAZILLI 87, ÖZBEK 142, ÖZBEK 100, DP388, SEASLAND, BEREN, FLASH, FIBERMAX 819, DPL 50, JULIA, BA525, ACALA ROYAL, GELINCIK, BA811, LYDIA, COKER 413, TX0091-2, LACHATA, DPL5614, CRINCLE LIF and DP119 variteies are potential earliest genotypes when compared the another genotypes.

Keywords: Cotton, Germplasm, morphologic earliness characters

*This study is a part of the experiments conducted by TUBITAK with project number 214O087

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The Analysis of problems in the certification application in state forestry administration in Turkey

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Abstract

The use of natural sources and increase in environmental damage around the world have come to a state in which it threatens the existence and functionality of forest resources as well as other natural resources'. The idea that economic development can only be achieved through the mentality of sustainable forest management supported by community involvement has ensured the improvement in certification systems of forestry and forest product. Therefore, in this study, the opinions of directors of state forestry administration in Turkey concerning the difficulties encountered or hardships which are possible to encounter in forestry and forest products certification are addressed. In this context, a questionnaire based on the face-to-face interview method has been carried out on 147 participants in manager position in 71 different State Forestry Management. While 11 of the forestry managements, on which the questionnaire is conducted, have FSC forest management certificates, 60 are non-certified businesses. At the end of this study, that bureaucratic procedures will increase within the management and that malfunctions will be experienced with respect to the operation, low level of certification awareness in Turkey, the inadequacy of collaboration between stakeholders and the incomplete forest cadastre all are determined as major obstacles to the certification. On the other hand, it has been detected that there are noteworthy differences in opinions between employees in certified companies and workers in non-certified businesses in respect to worker's health and safety, and stakeholder collaboration. In addition, it is conducted that there are significant differences between the working hours of participants and the participants' opinions concerning the problems encountered in the forest products certification.

Keywords: Forest management, Forestry and forest products, Certification, state forestry administration



The Perception Analysis of Forest Products Certification in the Wood and Wood Products Sector in Turkey

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Abstract

Industrialisation has improved a manufacturing-oriented comprehension in the forest industry along with the entire industry sector. The forestry and forest products certification, which has been developed to ensure a sustainable development and to reduce the pressure of this comprehension on the forest resources, is gradually gaining importance. In this research, it is aimed to carry out a perception analysis of the wood and wood products sector in Turkey towards the forestry and forest products certification. Therefore, a face-to-face survey has been conducted in 131 managements operating in the wood and wood products sector throughout the country. In the survey, the problems, which are expected to be encountered with the effect of certification on sector employees, forestry activities, and forest products market, are addressed to the participants in such a way that includes the sub-propositions. As a result of the analysis conducted, a significant diversity is observed concerning the opinions of executives on certification and environmental certificate possession status of managements. It is confirmed that there are noteworthy differences in opinions of executives about certification in regard to target market status of the businesses. In addition to this, the location and activity area of businesses creates significant diversity in views of business executives towards the certification. On the other hand, it is understood that the operating period, number of employees and annual sales revenue of businesses don't influence on the certification perception of business managers. As a consequence, it has been determined that forestry and forest products certification perception of the wood and wood products sector needs to be improved.

Keywords: Certification, Wood and wood products sector, Sustainable forest management

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Reduction of Variable Trials by Using Decision Trees Based Experiment Design Segmentation Method in the Optimization of Food Engineering Processes

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Abstract

In Food Engineering processes, optimization is the maximization or minimization of experimental result value by trying independent variable value variations that affect the experimental result value. The primary aim in optimization is to determine the variable values that will be produce the maximum or minimum experiment results. However, it is costly and time consuming to try these variable value variations one by one. Therefore, achieving the optimal result with only a few try is another purpose of optimization. The most preferred well-known Food Engineering optimization method is the response surface methodology that meets the both aim. However, this method has some disadvantages are insensitive to more than one optimum result, the possible modeling error, the need for experience to select initial variable variations, and so on. For this reason, in this study a method which can achieve the optimum experimental result value with a few variable value variations and also eliminate the deficiencies of the response surface methodology has been proposed. The proposed method is decision tree-based experimental design, segmentation and its aim is same as response surface methodology. The proposed method has been tested on *Escherichia coli* inactivation in kefir produced by using different concentrations *Saccharomyces cerevisiae var. boulardii*. In the experiment the antimicrobial effect of *S. boulardii* against *E. coli* was measured as counting results in every 2 storage days from 0 to 20. According to the findings obtained, it has been determined that the method can achieve the optimal experimental result value successfully using the variable variations between $2^{\text{number of variables} + 1}$ and $3 \times 2^{\text{number of variables} + 1}$. Thus, the advantages of the proposed method and its utilities for Food Engineering optimization processes have been proposed. Also, an alternative optimization technique has been proposed to field of Food Engineering.

Keywords: Optimization, Antimicrobial effect, Decision tree

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The Optimization Method by Using The Transformation of Two Variable Dependent Experiment Results into Image Data and Its Usability in The Food Engineering Applications

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Abstract

In this study, it is aimed to determine the variable values which should be selected to produce the optimal experiment results in the field of Food Engineering by using image processing methods. In the study, the matrix of experiment results dependent on two variable values is transformed into the gray-scale image matrix, then the cells with the darkest color values (cells with black color is the least-valued) in the image matrix were identified. Finally, the variable limits (coordinate limits) of the black color cells have been determined. Determined limits were considered to be variable limits which will produce the optimal result of the experiment. The method proposed in the study has been tested in an exemplary experiment in which the antimicrobial effect of the *Lactobacillus casei* Shirota against the *Staphylococcus aureus* is determined by in-vitro. According to the obtained findings, it was confirmed that the proposed method can be used to determine the optimum variable limits in similar Food Engineering analyzes. Also which of the image processing methods would be useful in such optimizations were proposed.

Keywords: Antimicrobial effect, Image processing, Optimization, Two variable dependent analysis

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15-17 May 2017

Nutritional Properties of Quinoa (*Chenopodium quinoa Willd.*) and Its Usage in Bakery Products

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Abstract

Quinoa (*Chenopodium quinoa Willd.*) is an endemic plant species peculiar to South America. Different names such as jupha, supha, suba and daheu are used to refer to quinoa. But in Bolivia, Peru, Ecuador, Argentina and Chile, it is especially called as quinua and quinoa. Although quinoa is not belong to the Gramineae family, these seeds can be milled into flour and used as a cereal crop which therefore it is called also as a pseudocereal. Quinoa has high nutritious value that it has rich in proteins, lipids, fibres, vitamins (B, C and E) and minerals (Fe, Ca, Mg, K). Protein content of quinoa seeds ranges between 14-18%. Due to their balanced amino acid composition with high content of essential amino acids, quinoa proteins are known as one of the high-quality proteins. Additionally, quinoa dietary fibre ranges between 7-10% which is similiar to grains as well as its soluble fiber content is between 1.3-6.1%. According to its high nutritional value, United Nations has recently assigned the 2013 as “International Year of Quinoa”. Bakery products have been mostly enriched with quinoa. Especially, pastas, breads, cakes, biscuits and breadsticks were the bakery products which quinoa seeds were used in the recipes. These studies conclusively showed that quinoa is a potential source for increasing the nutritional value of the bakery products.

Keywords: Quinoa seed, bakery products, enrichment.



Best Alternative Models to Increase Local Product Consumption

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Abstract

A local agricultural product which briefly defined as a product sold close to the area of produced have an important impact on local farmer's welfare. Within the scope of the study, consumer profiles who prefers local food and motives to buy local food were analyzed. The data of the study have been obtained through face to face interviews with agricultural product consumers. In that context collected data are primary which consist 93 surveys. Consumers selected randomly from university students in Adana where is the fourth biggest city of Turkey and has a very high potential of agricultural production. Firstly, through local product preference model with the help of ANP (Analytical Network Process) the weights that consumers give to the various criteria and alternatives have been determined. Based on these weights the combinations of most suitable conditions that consumers will prefer were determined. By taking into consideration the combination of consumers' three conditions with highest probability were examined. In determining the best design, the method of "the best combinations of alternatives"(BeCA) was employed. BeCA gives optimum homogeneous preference combinations with the aid of 0-1 integer programming. The best combinations that were obtained were analyzed by selected appropriate statistical tests. Considering the results of the study, firstly; 39 students over 93 are assigned to 3 best groups. Secondly, students preferred fruits which are produced with imported seed and local labour. Furthermore, students stated that they prefer organic and healthy foods –mostly fruits- and they want to reach that type of foods in their local food markets. Finally, students wanted to be informed about the foods by the TV broadcasts.

Keywords: Consumer, Local Product, The Best Combination of Alternatives.

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15-17 May 2017

Efficacy Assessment of *Aphidius colemani* (Hymenoptera: Braconidae) Inundative Release for Suppression of High *Myzus persicae* (Homoptera: Aphididae) Population in Greenhouse-Grown Eggplants

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Abstract

Aphids are important pest of greenhouse eggplants in Turkey, *Myzus persicae* (Hemiptera: Aphididae) is one of common species among the aphids which is under investigation to find an appropriate control strategies. It was observed previously that chemical control has been the primary means to control aphids in protected cultivation systems in Turkey. It is known that parasitic wasp *Aphidius colemani* is very efficient for the biological control of small-sized aphids, especially the cotton aphid and the green peach aphid. This study thus sought to investigate the ability of *A. colemani* to suppress *M. persicae* during the autumn, winter and spring months in plastic greenhouses. It was expected that the release of *A. colemani* on eggplants would have suppressed aphids' populations below the action threshold of 20 aphids per leaf. Both early fall and spring plastic greenhouse experiments showed that release of *A. colemani* significantly reduced aphid densities when compared to the control treatment. Aphid population has been suppressed in 10th and 6th week after releasing in autumn and spring, respectively. It is believed that *A. colemani* has been negatively affected by little high temperature in autumn compared to the spring. Further studies are needed to obtain quick *A. colemani* effects for controlling of aphids on greenhouse eggplants.

Keywords: *Myzus persicae*, *Aphidius colemani*, Biological control, Plastic greenhouse, Eggplant

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Application of Molecular Techniques for Detection of Acetic Acid Bacteria in Traditionally Produced Vinegar and Mother of Vinegar

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Abstract

Vinegar is the product of the two-step fermentation process during which numerous microbial transformations occur, giving the characteristic taste and fragrance of vinegar. Acetic acid bacteria (AAB) are the main microbial populations in vinegar carrying out the second transformation, oxidative fermentation. The identification of indigenous acetic acid bacteria playing a significant role in vinegar quality has a critical importance to improve the process control, prevent unpredictable transformations and detect potential starter culture. Therefore, in this study, we aimed to identify and characterize AAB populations in traditionally produced vinegars and their mother samples obtained from different producers in Turkey. After the sampling process, the samples were subjected to the traditional isolation procedure on agar plates and DNA extraction. The AAB isolates purified from the samples were initially grouped by using GTG₅-rep-PCR fingerprinting, and representative isolates were identified through sequence analysis of 16S rRNA gene, 16S–23S rDNA internally transcribed to the spacer region and *tuf* gene. It was detected that *Acetobacter* genus represented 59.1% of the isolates recovered from the samples while 37.5% of the isolates belonged to *Komagataeibacter* genus. *Acetobacter okinawensis* was the dominant *Acetobacter* species followed by *A. indonesiensis* in the *Acetobacter* genus. Other *Acetobacter* species such as *A. ghanensis*, *A. persici*, *A. tropicalis* and *A. syzygii* were also detected in minor levels. *Komagataeibacter europaeus* was the most frequently isolated species of *Komagataeibacter* genus while *K. intermedius*, *K. xylinus*, *K. hansenii*, *K. nataicola*, *K. saccharivorans* and *K. oboediens* were detected at lower frequency. Again, *A. okinawensis* was the most dominant species in the samples produced from apple, in contrast to the samples originated from grape in which *K. europaeus* was the dominant species. In the results, it was concluded that the AAB profiles of vinegar and their mother samples were markedly influenced by the raw materials used, production conditions and the region produced.

Keywords: acetic acid bacteria, vinegar, mother vinegar, species identification, molecular techniques

Effect of Barnyard Manure Application to Pistachio (*Pistacia vera* L.) Trees on Some Nutrient Contents of Leaves in Şanlıurfa Conditions

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Abstract

Most crops grown in climates such as we free the Southeastern Anatolia Region, mainly zinc and iron deficiency is seen in the purchase of essential elements. This study was carried out to determine the effect of barnyard manure application to pistachio trees grown in Şanlıurfa province on N, P, K, Cu, Mn, Fe and Zn contents of leaves. Clayey soils with high lime-sites, pH and cation exchange capacity is high, and electrical conductivity is low. Trial territory has adequate potassium while the region is insufficient in terms of both phosphorus and nitrogen. A significant portion of the research zone is also inadequate in terms of Fe and Zn available by plants. Considering averages barnyard manure application to the trees (leaves) the nitrogen, phosphorus, potassium, copper, manganese, iron and zinc content increased to by 42%, 60, 12, 15, 14, 46, and 70%. According to the results of the research, 10 trees with no barnyard manure were found to be deficient by N, besides phosphorus deficiency was seen in 7 trees. There were no potassium, copper and manganese deficiencies in the leaves. Iron deficiency was observed in 5 of these trees; Zinc deficiency was determined in 6 of these trees. On the other hand, only 1 of the 10 trees given barnyard manure grown trees showed N deficiency; Phosphorus, potassium, copper, manganese, iron and zinc contents of the leaves are within the ideal limits. For this reason, it can be said that the deficiency of the plant nutrients in the trees can be prevented by giving the barnyard manure to the pistachio trees at an appropriate level, and the adverse effect caused by chemical fertilizers will be reduced by the use of organic fertilizers.

Keywords: Sanlıurfa, pistachio, barnyard manure, nitrogen, phosphorus, zinc, iron

Spray-Freeze Drying of Bioproducts

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Abstract

Drying of bioproducts such as bacteria, yeasts, proteins and enzymes can be done by several methods such as spray drying and freeze drying. However, these materials are thermally sensitive and undesired changes can occur during drying such as loosing activity and decreasing viability of microorganisms. Therefore, the drying technique should be chosen by taking into consideration of material characteristics. At this point, Spray-Freeze Drying (SFD) comes up with a solution by combining the best features of both spray and freeze drying to produce high quality bioproducts. SFD involves atomization of the feed solution, freezing of the atomized particles by contacting with a cryogenic liquid and drying at low pressure. The first step of SFD is preparing spherical frozen droplets. To obtain desired size of frozen particles, the feed solution is atomized into a cryogenic liquid such as liquid nitrogen or very cold gas stream. Then, the frozen particles are collected and transferred to a freeze dryer. Atomization and freezing parts of SFD process can be carried out by different ways such as spray freezing into vapour (SFV), spray freezing into liquid (SFL) and spray freezing into vapour over liquid (SFV/L). Since the atomization method directly affects the droplet size distribution of final product, different nozzle types such as one, two or four fluid nozzles and ultrasonic nozzles can be used for spraying step. The right choice of the atomization and liquid delivery system as well as the right atomization conditions has a strong impact on the final product quality. In this review, characteristics of SFD method and biomaterials dried by SFD are discussed.

Keywords: Spray-freeze drying, bioproducts, atomization, nozzle, enzyme

Egg Batches Structure and the Rate of Hatching in Pine Processionary *Thaumetopoea pityocampa* (Denis & Schiffermüller, 1775)/*Thaumetopoea wilkinsoni* (Tams, 1924) Complex in Izmir Pine Forests

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Abstract

When forests are managed in a sustainable way, they are in an order and equilibrium. There are several factors that adversely affect this order and equilibrium. The most important of these factors are pests. The pine processionary insect (*Thaumetopoea pityocampa* (Den. & Schiff.)/(*Thaumetopoea wilkinsoni* (Tams)), which is very common especially in the forests of Turkey, cause significant losses in the growth and development of trees. Within the scope of the studies conducted, 283 egg batches were collected from four different species of Calabrian pine plantation forests. Collected batches were removed from their scale using brushes, counted and measured. For all regions, mean distance of egg the batches to base of needles was 6.9 mm, and the mean length of the batches with scales was 33.1 mm. The mean longitudinal number of eggs was 28.7. The mean number of eggs rows per batch was 7.3. The mean number of eggs was 208.1 and the mean hatching rate was 44.3% .For all altitudes, mean distance of egg the batches to base of needles was 6.9 mm. Mean length of the batches with scales was 32.8 mm, the mean longitudinal number of eggs was 28.4, and the mean number of eggs rows per batch was 7.4. The mean number of eggs was 206.4. The mean hatching rate was 44.8%. There was no significant correlation between the size of the tree and the size of egg batches with scale ($p>0.898$). There was a significant correlation between the size of egg batches without scale and the number of longitudinal eggs ($p<0.000$). There was a decrease in mean egg count from upper to lower altitudes based on the height. In larvae exit rates, there was an increase from the upper to the lower altitudes based on the height.

Keywords: *Thaumetopoea pityocampa*, egg batches, the rate of hatching.

Effects of Different Irrigation Levels with Bio-stimulant Applications on Plant Growth of 'Kabarla' Strawberry Variety

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Abstract

In this study, the effects of different irrigation levels with bio-stimulant applications on leaf area, crown diameter, number of crown, leaf number and plant width were investigated in a variety of *Kabarla*. The trail was implemented as a 4×2 factorial scheme (irrigation levels and bio-stimulant use), in split plot design with 6 consequent month at 4 replicates, totaling 32 plots. Bio-stimulant applications were designed as main plot and different irrigation levels were arranged as sub plot. Strawberry plant was subjected to four irrigation water levels (IR125, 1.25 Ep; IR100, 1.0 Ep; IR75, 0.75 Ep; IR50, 0.50 Ep). Bio-stimulant applications were investigated on these parameter with compared by control plot. As a result of the experiment, irrigation levels and growing period influenced the leaf area, crown diameter, plant width, number of crown and leaf number. Bio-stimulant application just positively affected the number of leaf, while other parameters were not affected by the application. All examined parameters were taken same statistical group except of IR50 which negatively affected plant growth. Also as expected, all plant vegetative part increased with time and this increase was determined statistically significant among months. As a result of these data, IR75 irrigation level could be recommended in terms of optimal vegetative growing combined with bio-stimulant applications.

Keywords: Drought stress, high tunnel, Class A pan, leaf area, crown diameter

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Discrimination of the origin of black tea samples: A data mining application

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Abstract

The aromatic profile of the black tea changes depending on the processing techniques, ecological and climate conditions, and clon characteristics. Therefore, the aromatic profile of tea belonging to different regions and countries has also be different. Because of that this characteristic aroma profile can be used as a discriminative attribute. In this study, we determined some marker compounds that discriminates the origin of tea samples originated from Türkiye, Sri Lanka and Iran by the help of data mining techniques. For this purpose, aroma compounds of (not brewed) tea samples were determined by using the Micro-Chamber/Thermal Extractor combined with GC-MS (μ -CTE™/ GC-MS) method. As a result, 330 different volatile compounds were detected by the method. We determined some marker compounds, which are statistically significant, for each cluster of tea. Data mining is the collection of techniques, which extract useful knowledge from the large amount of data. The functionalities of data mining include mining patterns in data, discrimination of data points, classification and regression, clustering, outlier detection etc. Some proximity measures are frequently used to measure the similarity/dissimilarity among data objects. Clustering is one of the well-known decision making problems. Clustering refers to separate data into groups of different objects based on the attribute properties. Within a cluster, a collection of data objects are similar to each other while they are dissimilar to objects in other clusters. In this study, we performed a data mining application in order to discriminate of origin of black tea samples. In the traditional application of data mining, objects are clustered into different classes according to attribute values. As different from other studies, our clusters are given but we find marker attributes, which actually constitute this aroma profile (cluster). Later, these markers can be used to determine the origin of an unknown black tea. We use different proximity measures and apply statistical techniques. We present our results.

Keywords: food microbiology, GC-MS, data mining, clustering, discriminant analysis



The design of a cold chain logistics network for perishable food products and an application

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Abstract

The supply chain of refrigerated products and prepared meals has been increasing and many logistic firms are improving their technologies in order to keep the freshness of foods they transported. Many food products are perishable and the shelf life of them is mostly affected by the environmental conditions in the supply chain. Efficient tracking of cold chain conditions is an important issue and requires the surveillance of the cold logistic chain. Because of different regulations, producers, processors or retailers are responsible for ensuring the food safety and quality. Therefore, the critical parameters affecting the food safety and quality should be monitored throughout the cold chain. For this purpose, indicators, sensors, RFID tags, M2M technologies have been used in order to track the cold chain.

The supply chain includes many stages such as sourcing, processing and distribution of food products to consumers. At some points, loading/unloading, handling and storage may be required. As the number or duration of these operations is increased, the shelf life of the product will decrease and the spoilage cost of the supply chain will increase. In this study, we design a cold logistic chain in order to minimize the total transportation cost and the spoilage cost due to loading, unloading and storage operations. We performed an application at a logistic firm carrying fresh foods such as fish, vegetables, chilled foods etc. from different sources to cold weather depots. The logistic firm has carriers at different capacity and inside conditions. Our aim is to determine optimum routes for each carrier in order to transport foods at good quality as well as to minimize transportation costs. Although some investment cost requires the vehicle traceability systems also help to reduce the spoilage costs. We perform a comparison with the current system and the proposed system in terms of different performance measures and present our results.

Keywords: Food economics and Industrial technology, supply chain, logistics

Effects on fecundity and development of *Myzus persicae* (Sulzer) (Hemiptera: Aphididae) of biocalcium applications to pepper (*Capsicum annuum* L.)

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Abstract

The role of calcium in plants is very similar to that in humans, for good growth and structure. Because the calcium transfer to the plant can not be done directly, it was separated to its nanoparticles and given as leaf foliage called biocalcium. Biocalcium is used as leaf fertilizer due to its content of carbon dioxide, which improves the photosynthesis activity of plants, increases enzyme activity and regulates plant health and productivity by strengthening the immune system. This research was undertaken to reveal the effects on the sucking insects of these changes in the plant structure due to biocalcium. In the study, plant growth was provided by applying biocalcium at the recommended doses and frequency to the leaves of the pepper plants. *Myzus persicae* nymphs were transferred to the leaves of plants grown in 5 different pots with and without Calcium, and their development was monitored. Fifth nymphs were used for each group of plants. At the end of the study, two-sex life tables were prepared by evaluating the development, reproduction and survival performance of green peach aphid. It was found that the development of the pests was 6.92 days in the biocalcium applied plants, 7.50 days in the control group and the reproductive rate was higher in the control group (40.15 individuals and 31.40 individuals). However, the intrinsic rate of increase was calculated to be higher in favor of biocalcium applied plants. According to these results, the effect of biocalcium applications on the development of *Myzus persicae* was affected positively.

Keywords: Age-stage two-sex life table, Biocalcium, Pepper, *Myzus persicae*, *Capsicum annuum*

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Cactus Pear (*Opuntia ficus-indica*)

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Abstract

Cactus pear is a fruit of a cactus of genus *Opuntia*. There are more than 300 species of *Opuntia* which is grown in arid and semi-arid regions in the world. It is cultivated in Aegean and Mediterranean regions (particularly Antalya, Adana, Mersin) of Turkey. Known as several local names (Frenk inciri, mısır inciri, babutsa, kilis inciri, pabuç inciri, kaynanadili, kürek yemişi), cactus pear is consumed as fresh and processed into juice, concentrate, colouring agent, fruit leather, low-alcohol beverages, vinegar, jam and marmalade. Furthermore; pulp, seed and shell of the fruit are evaluated in various sector.

Keywords: Cactus pear, *Opuntia ficus-indica*, Vitamin C, Dietary fiber

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The Effect of Nutrition on Insulin Resistance

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Abstract

Environmental factors (fast-food habit, sedentary lifestyle *etc.*) and genetic predisposition play an important role on the occurrence of insulin resistance. It is stated that insulin resistance is associated with diseases such as type 2 diabetes and coronary heart disease, high cholesterol, hypertension. Forcing living conditions, this situation can be put in order with making healthy nutrition programs ,changing of eating habits and regular exercise. In addition to this, feeding with low glycemic index foods can affect insulin resistance positively.

Keywords: Insulin, Pancreas, Type 2 diabetes, Diet

The Effects of Cadmium Doses on Plant Characteristics of Two Citrus Rootstocks

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Abstract

Cadmium (Cd) relatively rare element and not found pure in nature' is among the elements not essential for plants. The reason for being an important pollutant of Cd is that it is toxic at very low doses and its half-life is long. Cadmium is present in all agricultural soils, with varying amounts (mostly in small quantities). However, the intake of this element by plants is higher in low pH soil. Cadmium inhibits cell proliferation and restricts extension and enlargement of shoots and roots. Chlorosis, leaf curl and inhibition of growth are the most important effects of cadmium. Cadmium also reduces chlorophyll biosynthesis by inhibiting iron uptake. It also disrupts chloroplast metabolism by inhibiting chlorophyll biosynthesis and reducing the activity of enzymes involved in carbon dioxide fixation. In this study; Various plant characteristics of Domestic common sour orange (*Citrus aurantium* L.) and Carrizo citrange (*Citrus sinensis* L.) plants applied at 150 µm, 300 µm, 450 µm and 600 µm Cd were investigated. According to data obtained from current study, effects of Cd doses on trunk diameter, plant length, root length, root volume, root fresh weight, root dry weight, stem fresh weight, stem dry weight, leaf area, amount of chlorophyll and stomatal conductivity were found statistically significant. As a result of this study, when the characteristics of trunk diameter, plant height and root length were taken into consideration, the Carrizo Citrange rootstock was more affected by Cd doses, whereas domestic common sour orange was more affected when other characteristics were taken into consideration. In addition, even low doses of Cd have also caused considerable damage on rootstocks.

Keywords: Cadmium, citrus, heavy metal, plant characteristics.

Bio-fungicide potential of *Pistacia terebinthus* plant extracts against some plant pathogenic fungi

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Abstract

Fungicides, which are used extensively in the struggle against plant pathogens, threats to the environment and to humans. In this study, the bio-fungicide effect of the ethanol extract obtained from leaves and seed parts of *Pistacia terebinthus* plant was investigated. Activity studies against *Alternaria solani*, *Fusarium oxysporium f. sp. radicle-lycopersici* (FORL), *Monilia fructigena* and *Verticillium dahliae* plant pathogens were determined using the agar plate method. Doses of extracts of 10, 50, 100, 200, 500 mg/ml were used against the test organisms. Mycelial growth, mycelial growth inhibition and lethal doses (LD₅₀) were determined for each pathogen against the extracts. Strong bio-fungicidal effects were observed for each extract used against pathogens. These effects increased as the dose increased. Fungicidal effects against the test organisms were respected at the same rate (100%) with the positive control at the 500 mg/ml dose of the extract. Doses of LD₅₀ of *P. terebinthus* leaf extract were calculated for *A. solani*, 26.38 mg/ml, 19.02 mg/ml for FORL, 61.31 mg/ml for *M. fructigena* and 59.88 mg/ml for *V. dahliae*. Similarly, *P. terebinthus* seed extracts were found to be 22.20 mg/ml for *A. solani*, 66.57 mg / ml for FORL, 78.62 mg/ml for *M. fructigena* and 68.44 mg/ml for *V. dahliae*. Menengic leaf extract was found to be more effective against test organisms. Consequently, it has been demonstrated that extracts derived from *P. terebinthus* plant have strong bio fungicide effects.

Keywords: Bio-Fungicide, Plant Extracts, Plant Pathogenic Fungi, *Pistacia terebinthus*, Menengic

Basic Properties and Production Method of Soufflé Cake

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Abstract

Soufflé cake is a special kind of cake made from sugar, flour, fat, baking powder, hydrocolloids and soufflé sauce. Compared to other types of cakes, the batter density is higher than the sauce density and the production stages are more complicated, and it's relatively a newer product. In sauce cakes, sauce is injected to the cake after the product is baked whereas the sauce of the soufflé cake is placed in the soufflé cake before baking as it is heat-resistant. The soufflé cake has three separate layers: soufflé cake batter, soufflé sauce and cake batter again. The sauce settling problem is not seen in sauce cakes whereas the sauce in soufflé cake may settle if the difference between the densities of batter and the sauce is not well adjusted so the desired texture cannot be obtained. Therefore, it is very important to obtain the desired batter density by using the appropriate amount of hydrocolloids in soufflé cake production. Thus, it can be ensured that the batter density is somewhat higher than the density of the sauce. Compared to plain and sauce cake batter, soufflé cake batter with higher density and it swells relatively low. To overcome this problem, the baking powder used in the batter formulation must be in the proper concentration. There are no scientific studies in the literature conducted in Turkey on soufflé cake which is a bakery product that has emerged in recent years and consumed by the masses. Therefore, it is thought that scientific studies to be conducted on the soufflé cake would be useful and necessary. In this study, basic properties and production method of soufflé cake was discussed.

Keywords: Cake, Soufflé cake, Soufflé sauce, Batter density, Product quality, Production method

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Usage of Quinoa (*Chenopodium quinoa* Willd.) and Stevia (*Stevia rebaudiana* Bertoni) in Bakery Products

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Abstract

The studies of diversification of food products and improving their quality in terms of both palatal delight and their convenience with human health become more widespread in parallel with the economic and technologic developments. Bakery products in this group occupy a special and important place. Quinoa which falls under the category of pseudocereal and which can be counted among the food products that can be consumed by celiac disease patients as it doesn't include gluten protein in its formula is chosen as an alternative food to reduce food poverty by the United Nations and it has declared 2013 as The International Quinoa Year to increase the demand for this product. Quinoa seed consists of 60-69% carbohydrate, 13-20% protein, 9-12.6% moisture, 4-10% fiber, 5-6% lipid, and 3-4% minerals. Quinoa which includes almost all kinds of vitamins, being rich in mineral matters, consisting of all basic amino acids, having ideal amino acid balance suggested by FAO in terms of lysine and histidine, including no cholesterol due to being a herbal product, containing edible vegetable oil which has high quality, comprising polyphenol, phytosterol, flavonoid in its formula, and having nutraceutical benefits is a highly nutritious and functional food product. Stevia which is a sweetening with no calorie has been used as a natural sweetening in many countries for a long time. Stevia is 300 times sweeter than sucrose, and it is a natural product which has high temperature and pH stability, which doesn't taste like metal or something bitter and containing high fiber in it. Stevia which is suggested for diabetic patients as it reduces the blood glucose without influencing insulin metabolism is used in almost every kind of food products, and it is added in the formulation of bakery products like pastry, cake, cookie which are baked in highly heated ovens.

Keywords: Quinoa, Stevia, Bakery products, Functional food

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Comparison of Antioxidant Activities of *Pleurotus ostreatus* Stored at Different Temperatures

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Abstract

Pleurotus ostreatus, is cultivated mushroom species and has the second largest share next to *Agaricus bisporus* in the world market. Oyster Mushrooms are known to be medically active in several therapies, such as antitumour, antibacterial, antiviral, haematological and immunomodulating treatments. In this study antioxidant capacity of *Pleurotus ostreatus* which was stored at different temperature (+20°C, +4°C, -10°C, -20°C and -40°C) was investigated by DPPH (1,1diphenyl-2-picryl hydrazyl) radical scavenging method. Antioxidant capacity results of oyster mushroom extracts were carried with spectroscopic measurements and expressed as percent of inhibition. According to results the inhibition (%) of *Pleurotus ostreatus* for four different concentrations were found $inh_{+20°C} > inh_{+4°C} > inh_{-10°C} > inh_{-20°C} > inh_{-40°C}$, respectively.

Keywords: Antioxidant capacity, *Pleurotus ostreatus*, Different temperature, DPPH method.

Effects of Mulch Treatments on Lateral Branching and Fruit Characteristics of *Prunus avium* “Sweet Heart”

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Abstract

In this study, the effects of mulch treatments on branching and fruit characteristics of perlan (GA₄₊₇+BA) treated Sweet Heart sweet cherry trees were investigated. In sweet cherry cv. Sweet Heart grafted on Mazzard, black and clear polyethylene mulch were used as material. Plants were planted as 3 replicates and there were 8 saplings per replicates. Mulch materials were applied at the end of March and perlan was applied when the plants height reached to 50 cm. The data were obtained in November 2013 (for tree and branch characteristics), in June 2015 (for fruit characteristics) and in April 2016 (for flower numbers) and the results were analysed with SPSS. Plant height, stem diameter, branching height, numbers-lengths-diameters-angles of lateral branches, yield per plant, fruit number per plant, rate of tree which bears fruit, fruit diameter and number of flower per plant (because of hail damage) were investigated and results were found statistically significant. In this experiment, black mulch+perlan (BM) treatment was found the most effective in terms of most features. It was provided 1.71 lateral branches per plant, 48.50° branch angle, 27.23 cm in length, 6.73 mm in diameter by BM treatment. Also, in BM treatment; 79.77 g fruit per plant, 11.80 fruit per plant, 23.38 mm fruit diameter and 6/7 rate of tree which bears fruit were obtained. Nevertheless, clear mulch+perlan (CM) provided maximum flower number (83.67 flower per plant) for second fruit year. At the end of study, it can concluded stated that BM treatment providing formation of well-developed and a lot of lateral branches may be useful. Also, it provided highest fruit yield per plant for first fruit year. For second fruit year, CM has provided highest fruit yield. But, it can be caused by low fruit yield of previous year (15.50 g per plant).

Keywords: Cherry, perlan, mulch application, lateral branching, fruit characteristics



Salt Stress Effects during Germination on Barley

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Abstract

Salinity is one the major causes of affecting crop growth and yield worldwide. Barley is known as a species with higher salt tolerance among cereals and rich in genetic variations. It is quite important to understand the physiological mechanisms of genotypic difference in salt tolerance. The aim of this study is the investigation of physiological and biochemical responses of four barley genotypes *Hordeum vulgare* L. cvs. (*Hasat*, *Beyşehir 99*, *Konevi 98* and *Tarm 92*) to 150 mM salt stress application during 3 days germination period. The results showed that the germination percentage of *Hasat* did not significantly affected by 150 mM salt treatment ($p>0.05$). *Beyşehir 99* and *Tarm 92* demonstrated a decrease for germination percentage ($p<0.01$). On the contrary, germination percentage of *Konevi 98* was slightly increased compared to other three cultivars. In addition, 150 mM salt stress significantly affected root and shoot heights, fresh and dry weights, water content (WC) and protein content. However, proline content altered only in *Beyşehir 99*. These findings will be expected to contribute understandings of how salt affects barley germination on different varieties grown under salt stress condition.

Keywords: Salinity stress, development of plant, *Hordeum vulgare* L.cvs.

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Effects of long-term tillage systems on soil water content and wheat yield under Mediterranean conditions

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Abstract

Long-term (2006-2014) effects of six different tillage systems on soil water content (SWC) at different periods during the wheat production season and wheat yield were investigated under clayey soil (50% clay) conditions in the Çukurova region (South Turkey). The tillage treatments were; conventional tillage with stubble (moldboard plowing) (CT1), conventional tillage with stubbles burned (CT2), heavy disc harrow reduced tillage (RT1), reduced tillage with rotary tiller (RT2), heavy disc harrow zero soil tillage (RNT) and no till or zero tillage (NT). Tillage practices had statistically important effects on SWC on 6 February, 9 March, 17 April and 8 May of 2015. Although moisture values measured on 6 February and 9 March were optimal for plant growth, SWC under conservation tillage practices were higher compared to conventional tillage practices. However tillage practices had no significant effect on the wheat yield. These results showed that the low-input and energy saving reduced and no-tillage practices can be alternative to conventional tillage practices under Mediterranean conditions.

Keywords: Soil tillage, Soil water content, Wheat yield, Mediterranean

Monitoring The Persistence of Chlorsulfuron Herbicide in Trakya Region of Turkey

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Abstract

This study is about monitoring the persistence of chlorsulfuron herbicide in a wheat planted field at Trakya Region of Turkey. Use of containing this active ingredient is advised in the Marmara region of Turkey for wheat agriculture for several years. The study was conducted in wheat planted field when chlorsulfuron applied. Over eight months, in each two or three week periods, soil samples were obtained from selected sampling points and chlorsulfuron amounts were determined by gas chromatography with electron capture detector (GC-ECD). As a result of these studies, the persistence of chlorsulfuron was determined as approximately 1.2% at the second half of June, 2016. The results of this monitoring showed that chlorsulfuron is generally adsorbed weakly by soil. Organic material, climatic factors, pH, clay content, soil texture, saturation of soil were the main factors influencing the persistence of chlorsulfuron. The results of this study demonstrated that chlorsulfuron amounts in the soil might depend on its different chemical structures, climatic properties such as soil temperature, precipitation and humidity.

Keywords: Chlorsulfuron, Active ingredient, Gas chromatography, Herbicide, Wheat



Rehydration Kinetics of Sun-Dried Eggplants (*Solanum melongena* L.) at Different Temperatures

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Abstract

In this study, sun-dried eggplant samples were rehydrated at three different rehydration water temperatures (25, 35 and 45°C) and effect of rehydration kinetics were investigated. Four different models were used to model the rehydration behaviours of sun-dried eggplants and non-linear regression analysis were performed to obtain the model that gives the best fit to the experimental data. The coefficients of the models were calculated. According to regression analysis, Peleg model gave a better fit for all rehydration conditions applied. On the other hand, the effective diffusivities were also calculated and found between $3.21 \times 10^{-8} - 4.06 \times 10^{-8} \text{ m}^2 \text{ s}^{-1}$ values. The rehydration temperature also affected the rehydration rate. At high temperatures the moisture gains of samples was determined to be faster.

Keywords: Eggplant, Sun drying, Rehydration, Kinetics, Model, Peleg

Risk Factors for Animal Related Injury Among Livestock Farmers

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Abstract

Injuries is very common problem for livestock farms, sometimes worker can disabled because of these problem. After injuries, there is nothing to do accept treatment costs and healing effort of the people. A casual assessment of any group of farm or ranch workers will often detect missing digits and limbs, impaired mobility, or a wide range of scars from accidents with both animals and machine. The most animal injuries are caused by large animals. In cattle-related accidents, fatalities have been shown to be related to aggressive behavior of the animal. Many task has injury risk during daily activity at farm. Tagging newborn calves, feeding and herding were the most commonly cited situation in which the injury occurred. Moving cows to hoof trimming involved much higher injury risk exposure to the handler than moving cows to milking. The more aversive hoof trimming procedure involved higher frequencies of **fear responses by the cows**, more forceful interactions by the handler and higher rates of incidents and risk situations. When moving cows to milking, risk situations were primarily associated with **facility design** and the perceived **energy level of the handler**. The correlations reported significant between specific human-cow interactions and facility characteristics and incidents. Many people who work with animals including farmers, veterinarians, butchers, and workers are all at risk. Research on the topic of human-animal interaction and its relationship to productivity and health is limited. Because of this, this review will focused on the sources of risk and the perception level of risk strategies are investigated in the dairy farms aspect of the effect of work safety, animal welfare criteria on profitability.

Keywords: Work Safety, Animal Behaviour, Livestock Farms



Method Validation for Determination of Indoxacarb residues in Apples by QuEChERS method

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Abstract

Method validation is an important performance parameter for every pesticide residue analytical methods. All methods used for pesticide residue analysis must be validated prior to implementation of original laboratory sample analyses, even if internationally official analytical method. In this study, QuEChERS method was validated using Golden Delicious (Golden D) and Starking Delicious (Starking D) apple varieties, by fortification with 0.05, 0.5 and 5.0 mg/kg indoxacarb. For this aim, untreated blank Golden D and Starking D apple samples were uniformly homogenized and fortified at 3 levels with pesticides. 10 g of apples were subjected to QuEChERS extraction method, incorporating a simple simultaneous cleanup step. Chromatographic separation was performed by using LC-MS/MS. According to *Student T test*, matrix effect was important for indoxacarb for both apple varieties. Thus, matrix matched calibration (MC) was used to compensate matrix effect. MC_{Golden D} and MC_{Starking D} were used for the quantification. The validity of QuEChERS analytical method was performed by the method performance parameters such as, accuracy, linearity of calibration, recovery, estimated method detection limit, repeatability and precision. All found to be within the required limits. For indoxacarb, solvent calibration curve and both matrix matched calibration curve were the linear over the range of 5–200 ng/ml. For Golden D apples, recoveries averaged 97.50% with a relative standard deviation (RSD) of 9.80 %. Similarly for Starking D apples, recoveries averaged 96.11% with RSD of 9.17%. For overall recovery (for both apple matrices) of the QuEChERS method was 96.81 % with a relative standard deviation of 9.50 % (n= 90). These all findings comply with the values specified for mean recovery range (70–120%) and repeatability (RSD ≤ 20%). Estimated method detection limits of analytes were also below the EU MRLs and TGK MRLs.

Keywords: Pesticide residue, QuEChERS, Method validation, Matrix effect, Recovery.

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15-17 May 2017

Effect of GAP Project on Cotton Production in Turkey: Changes of Last Decades

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Abstract

Fiber is one of the most indispensable basic needs for our life. There are several types of fibers that are important for human health. Cotton fiber is the most important one and has a share of 28% in all the fibers consumed and a share of 75% among vegetable fibers. Cotton (*Gossypium hirsutum* L.) being a major cash and industrial crop of Turkey, plays a key role in the boosting of national economy. Besides earning huge amount of foreign exchange through textile export, it also provides fiber for inland textile industry. Cotton cultivation is mainly dependent on the environmental conditions. Thus, while the fiber properties of cotton depend on the genetic potential of cotton varieties, they might also be affected by environmental conditions. In our country, cotton cultivation is mainly carried out in three regions including Southeastern Anatolia, the Mediterranean region (including the province of Antalya) and Aegean Region. Southeastern Anatolia Project (SAP) called GAP is carried out in Southeast of Turkey and it is a multifaceted project covering irrigation, energy and health. Under this project, with the release of water into the Harran Plain in 1995, cotton production has been increasing year by year in the region. Cotton varieties grown in each of the three geographic regions are different from each other due to the different ecological conditions of the regions. In this article, it will examine the impact of GAP project on cotton production, cotton acreage and development of last decades in South East Anatolia and Turkey.

Keywords: Cotton, Production Turkey, SAP

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Bioaccumulation Of Toxic Metals in Muscle, Gills and Digestive Gland Tissues Of Mussel (*Mytilus galloprovincialis*) and Risk Assessment for Human Health

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Abstract

There is a major interest in determination of toxic metals in marine animals because of seafoods are the mostly consumed by a lot of people and can accumulate heavy metals from water and subsequently transferred to human through the food chain at the damaging levels. In this study, mussels (*Mytilus galloprovincialis*) were taken from Marmara Sea, İstanbul-Turkey in January-February 2016. After digesting muscle, gills and digestive gland organs of mussels by microwave radiations, the clear solutions were analyzed. In the measurement step, elemental analysis was performed by using ICP-MS. The obtained results were evaluated in terms of risk for human health. Mean metal concentrations in different tissues were in the following ranges: Hg: 0.012-0.072, Cd: 0.143–0.672, Pb: 0.235–0.788, Ni: 0.233–1.990, Cr: 0.360-0.950; As: 0.656-6.870, Al: 7.002-28.700, Mn: 0.951-1.870, Cu: 0.836-4.560 mg kg⁻¹ based on wet weight. Generally, the concentrations of the toxic elements found in different tissues of fish species are categorized as muscle < gill < digestive gland. The described method was validated by analysis of certified reference material. Limits of detection (LOD) and quantitation (LOQ) were found to be (as µg L⁻¹) 0.006 and 0.02 for Hg, 0.004 and 0.01 for Cd, 0.007 and 0.20 for Pb, 0.35 and 1.0 for Ni and 0.33 and 1.0 for Cr, 0.035 and 0.10 for As, 1.0 and 3.0 for Al, 0.35 and 1.0 for Mn, 0.20 and 0.50 for Cu, respectively.

Keywords: toxic metals, mussel (*Mytilus galloprovincialis*), risk assessment.

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The Effects of ORKÖY Activities on Sustainable Rural Development (Example of Kütahya Regional Directorate of Forestry)

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Abstract

This work was handled to investigate the effects of ORKÖY (Forest and Village Relations; FVR) activities of the General Directorate of Forestry (GDF) on developing forest villagers, forestry activities and hence sustainable rural development. For this purpose, Kütahya Regional Directorate of Forestry (KRDF), where the ORKÖY activities (economic and social credits, informing and training-consulting services etc.) were carried out intensively, was selected as the study area. Data on ORKÖY and forestry activities taken from the registers of KRDF and the affiliated six forest enterprises (Domaniç, Emet, Gediz, Kütahya, Simav, Tavşanlı) during the last five years (2012-2016) and the information obtained from the questionnaire on forest villagers and forest managers was used as material in this study. The obtained data were evaluated by graphics, charts and statistical analyzes. At the end of the study, credits given to forest villagers for economic and social purposes and annual average economic contribution by ORKÖY, firewood rent (subsidy) provided to forest villagers due to ORKÖY activities, contributions of ORKÖY activities to rural development and socio-economic structure of forestry villages, to reducing rural poverty, preventing migration, protecting forests and sustainable forest management were determined on the base of KRDF during the period of 2012-2016. Additionally, it has been determined that the activities of ORKÖY are largely satisfied with the forest village and these activities have had positive effects on forestry activities (forestry, erosion and pasture work, production, forest protection etc.) and sustainable rural development. Thus, it has been found that ORKÖY is effective and successful at “medium-good” (70%) level in sustainable rural development, and accordingly some proposals for implementation have been developed.

Keywords: Forest village, Forestry, Kütahya, ORKÖY (FVR), Sustainable rural development, Turkey

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The French Paradox: Resveratrol

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Abstract

Resveratrol (3,5,4'-trihydroxy-trans-stilbene) is a natural polyphenol present in pistachios, peanuts, mulberries, blueberries, dark chocolate; though it is found in higher concentration in the seeds and skins of grapes. This phytoalexin is produced when plants are subjected to adverse conditions, especially when there is a biotic stress, such as an attack by a microorganism, or abiotic stress such as chemical treatments. Resveratrol plays a potentially important role in many disorders and has been studied in different diseases. The research on this chemical started through the “French paradox,” which describes improved cardiovascular outcomes despite a high-fat diet in French people. Since then, resveratrol has been broadly studied and shown to have antioxidant, anti-inflammatory, anti-proliferative, and anti-angiogenic effects, with those on oxidative stress possibly being most important and underlying some of the others, but many signaling pathways are among the molecular targets of resveratrol. In concert they may be beneficial in many disorders, particularly in diseases where oxidative stress plays an important role. The main focus of this review will be the pathways affected by resveratrol. Based on these mechanistic considerations, the involvement of resveratrol especially in cardiovascular diseases, cancer, neurodegenerative diseases, and possibly in longevity will be addressed.

Keywords: Cancer, Cardiovascular Diseases, Resveratrol, Polyphenol

Predictive Performances of Chaid and Mars Data Mining Algorithms in the Establishment of Relationship between Live Body Weight and Several Morphological Measurements of Indigenous Mengali Sheep and Its Economic Importance

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Abstract

The objective of this study was to compare statistical performances of CHAID and MARS data mining algorithms in establishing live body weight by some morphological measurements (withers height, body length, chest girth, face length, face width, tail length and ear length) measured easily from 304 indigenous Mengali sheep at 2 yr of age and to determine economic importance of live body weight. Also, the effect of gender (male and female) and farm (field farmer and research station) factors on the live body weight was examined in the present study. Statistical performances of these algorithms were tested by using several goodness of fit criteria, coefficient of determination ($R^2=0.724$ and 0.819), adjusted coefficient of determination (Adjusted $R^2=0.720$ and 0.802), coefficient of variation ($CV\%=6.35$ and 5.14 , $P<0.01$), standard deviation ratio ($SD_{ratio}=0.56$ and 0.43), root of mean square error ($RMSE=2.49$ and 2.01), relative approximation error ($RAE=0.063$ and 0.051), mean absolute deviation ($MAD=2.05$ and 1.61), mean absolute percentage error ($MAPE=5.00$ and 4.00) and Pearson correlation coefficient (0.851 and 0.905 ; $P=0.033$) between observed and predicted values in live body weight, respectively. Numbers of minimum sheep for parent and child nodes were determined as 10 and 5 with the aim of providing high predictive accuracy in the CHAID data mining algorithm. Results of the predictive performances showed that MARS data mining algorithm was more informative and powerful in the prediction of live body weight in Mengali sheep. In the CHAID algorithm, the heaviest average live body weight was obtained by male Mengali sheep reared in research station (48.983 kg), as the most income (48.983 x 3.46 \$ per live body weight = 169.48 \$). The lowest average body weight (35.355 kg) was obtained by sheep whose withers height 69.50 cm or shorter in female sheep reared in field farms, which produces 35.355kg x 3.46 \$ =122.33 \$, which is lower compared with those reared in research station (40.450 kg x 3.46 \$=140 \$). It could be suggested that the present results might be utility in the identification of breed standards, the regulation of managerial conditions and the obtainment of more income in indigenous Mengali sheep.

Keywords: CHAID, MARS, Data mining, Sheep breeding, Mengali sheep, Predictive modeling, Economic importance

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15-17 May 2017

The General Evaluation of Possible Management, Biotechnology and Breeding Strategy Methods for Profitable Cattle Meat Production

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Abstract

Turkish cattle production system typically show seasonal variation depending on the many factors. It means that there are increases or decreases in animal numbers from time to time due to some restrictions Which is animal prices, calving rates, longevity, calf growth performances, market prices and climate characteristics. Price increases in animal products are also triggering demand for animal husbandry. According to TÜİK 2013, the amount of red meat production per capita is 11,34 kg for cattle, 1,65 kg for ovine, a total of 12,99 kg. In the report of the Commission of the European Union in 2012, per capita meat consumption in the US is 15.5 kg of cattle-beef, 2.1 kg of sheep-goat, 24 kg of poultry meat, 40.5 kg of pork meat. Per capita meat consumption in the US In 2011 is cattle beef 57 kg, poultry meat 83.3 kg, pork 45.1 kg. The desired and expected yield levels have not yet been achieved. In general, the increase in per capita meat consumption is not realized due to population growth. In addition, the increase in demand, which is due to from non-livestock purposes causes the increase in pressure on the rangelands and the decrease in cattle beef. For this reason, there is a transition to red meat sources outside of beef. The use of dairy breed for the beef production system highly preferred in cattle farming system in Turkey. In this context, the results obtained in the breeding strategies, management systems and the biotechnological methods results will discussed.

Keywords: Turkey, Cattle Meat Production, Breeding, Management System, Biotechnology

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15-17 May 2017

Biopreservation of Boza: Increased Shelf-life, and Panelist and E-Nose Evaluated Sensory Properties by Application of Lysozyme and Nisin

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Abstract

In this study, the effect of natural GRAS status antimicrobials, lysozyme and nisin, on the extension of shelf-life and sensory properties of boza which is a traditional fermented beverage, were studied. For this purpose, lysozyme (500 µg/g), nisin (250 µg/g) and lysozyme-nisin combination were added into boza in order to monitor the effect of these antimicrobial agents. The samples were stored at +4 °C for 28 days and during this period some analyses including enumeration of LAB, measurement of pH and titratable acidity and determination of D-lactic acid content were performed. In addition, the change in sensory properties were evaluated by sensory and e-nose analyses. The samples containing nisin as an antimicrobial agent were significantly more effective than the others in respect to suppressing the growth of LAB, reducing lactic acid production and decreasing of pH drop. In contrast, the lysozyme containing samples did not cause a significant difference compared to control group that LAB population increased up to 10⁷ log CFU/g and pH decreased towards 3.6 by the production of D-lactic acid. The effectiveness of nisin treatment in biopreservation of boza was also proved with the data obtained from sensory and e-nose analyses. The sensory properties of lysozyme containing groups and control groups were significantly inferior than those containing nisin (p<0.05) that were the most preferred boza group. As a conclusion, the biopreservation of boza with addition of nisin at the legal limit (1) limits microbial growth and (2) pH reduction, and (3) maintains desired sensory properties of boza longer than the control boza samples. The use of nisin in preservation of boza could be an opportunity to export this traditional beverage to distant countries without any changes in its quality parameters.

Keywords: Biopreservation, boza, antimicrobials, lysozyme, nisin



Gene expressions and activities of GR and GST in leaves of tomato exposed to Cd and Pb

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Abstract

The contamination of agricultural areas increases as results of agricultural activities such as poor agricultural practices and excessive use of fertilizers, herbicides and pesticides. The pollution of plant cultivated fields with heavy metal related factors affects soil quality and plant fertility, growth and development. The accumulation of heavy metals has influenced various physiological, biochemical and molecular changes in plant life cycles. Plant development and crop productivity are depended on environmental conditions in agriculture and they have evolved a series of detoxification systems to tolerate the oxidative damages created by heavy metals. Glutathione reductase (GR) and glutathione S-transferase (GST) play key roles as antioxidant enzymes to protect the plants from environmental stress conditions. In the current study, it is aimed to evaluate the mRNA expression of the related genes and enzyme activities of GR and GST are measured in the leaves of tomato under the increasing doses of Cd and Pb. The gene expression of *GR* and *GST* was analyzed by qPCR (real-time PCR). The application of Cd and Pb induced the transcriptional expressions of *GR* and *GST* in tomato compared to control plants. Transcriptional expression of *GR* globally raised except for 10 ppm of Pb which show no significant a change. The gene expression of *GST* significantly increased in all treatments of heavy metals. The enzyme activities of GR and GST significantly enhanced by the application of Cd and Pb in leaves tomato compared to control groups. The results in the present study indicated that the gene expressions generally have a correlation with activities of GR and GST. However, there are relatively small differences which may be associated with post-transcriptional and post-translational modifications. These results have indicated that the activities and transcriptional expressions of GR and GST are the responses of the tomato leaves under the heavy metal stress.

Keywords: Cadmium, Gene expression, Glutathione reductase, Glutathione S-transferase, Lead, Tomato

Potential Use of *Carpobrotus acinaciformis* to Remediate the Saline Soils

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Abstract

Salinization and sodification are the major abiotic soil stress factors. They reduce soil fertility and consequently affect the crop production. Salinization negatively affect the physico-chemical properties of the soil. An alternative approach, which is safe, cost-effective, with long lasting remediative effect is to use of halophytes with high removing salt capacity. Salt removing halophytes do not destroy the physical and chemical properties of the soil. In this study, one of the halophyte species *Carpobrotus acinaciformis* was investigated for potential use in those soils. Soils with different salinity levels: non-saline soil (EC= 1.38 dS m⁻¹); slightly saline soil (EC= 3.5 dS m⁻¹) and highly saline soil (EC= 9.6 dS m⁻¹) were used to assess the salt tolerance capacity of *C. acinaciformis* and to determine the remediative effects in saline soils in terms of physiological and biochemical characteristics. The fresh and dry weight of *C. acinaciformis* increased with increasing salinity levels. The proline and chlorophyll contents of *C. acinaciformis* were insignificant under all salt conditions ($P \leq 0.05$). However, Na⁺ and Cl⁻ concentrations significantly increased in the leaves. The impact of removing of Na⁺ and Cl⁻ ions from soil was remarkable in with high saline soil conditions. Therefore, soil EC levels could be reduced significantly via the use of *C. Acinaciformis*.

Keywords: *Carpobrotus acinaciformis*, Halophytes, Phytoremediation, Soil salinity

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Determination Of Toxic Metals in Muscle, Skin and Liver Tissues Of White Seabream (*Diplodus sargus*) and Risk Assessment for Human Health

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Abstract

Because of development of technology and industry, increase in domestic waste in parallel with the increase in population and the mixing of industrial wastes with waters by various ways causes the waters to be polluted and accordingly, fish to be exposed to many toxic matters, and fish can absorb many most of the metals in high amount into their bodies. Furthermore, the accumulation of heavy metals in the tissues and organs of fish varies depending on the species, metal, environmental concentration of the metal and effectiveness duration. In this study, white seabream (*Diplodus sargus*) were purchased large supermarket in Elazig, Turkey, January-February 2016. After digesting muscle, skin and liver organs of white seabream (*Diplodus sargus*) by microwave radiations, the clear solutions were analyzed. In the measurement step, elemental analysis was performed by using ICP-MS. The obtained results were evaluated in terms of risk for human health. Mean metal concentrations in different tissues were in the following ranges: Hg: 0.033-0.066, Cd: 0.063–0.218, Pb: 0.407–0.502, Ni: 0.135–0.435, Cr: 0.370-0.752; As: 3.705-9.239 mg kg⁻¹ based on wet weight. Generally, the concentrations of the toxic elements found in different tissues of fish species are categorized as muscle < skin<liver. The described method was validated by analysis of certified reference material. Limits of detection (LOD) and quantitation (LOQ) were found to be (as µg L⁻¹) 0.006 and 0.02 for Hg, 0.004 and 0.01 for Cd, 0.007 and 0.20 for Pb, 0.35 and 1.0 for Ni and 0.33 and 1.0 for Cr, 0.035 and 0.10 for As, respectively.

Keywords: toxic metals, white seabream (*Diplodus sargus*), risk assessment.



Physicochemical and Rheological Properties of Wheat Flours Produced in Lake District of Turkey

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Abstract

In this study, it was aimed to determine physicochemical and rheological properties of bread and durum wheat flours. Flours were obtained after grinding totally 19 genotypes of wheats which were collected from local producers from lakes district. Chemical and physicochemical analysis such as moisture and ash content, wet and dried gluten, gluten index, Zeleny sedimentation, modified Zeleny sedimentation and rheological properties such as farinograph, Kieffer dough and gluten extensibility rig (KDG) and Dobraszczyk/Roberts dough inflation system (DRS) tests at texture analyser were carried out. Moisture, ash and wet gluten content were found between 12.14- 14.79%, 0.457-0.837% and 8.47% - 36.17% respectively. The lowest GI was determined at Kunduru-1149 while the highest GI was determined at Ankara 98. When the farinograph properties of flour were examined, the water absorption, dough development time, stability and softening values were varied between 53.3-67.7%, 1.0-6.7 min., 1.3-17.0 min and 1.2-205 B.U. respectively. Mirzabey and Kunduru-1149, which have low gluten and sedimentation values, have also been found to have low stability and maximum resistance to extension (Rmax) while Rmax of Lavanta and Cumhuriyet-75 was examined highest. Average extensibility of samples were 18.1 mm, curve area 126.2 g.s. DRS tests were showed that, Burgaz with 278.3 mm was take the first part among all wheat genotypes. Extensibility of Bezostoja was found highest when it was measured at both KDG and DRS tests. Bezostoja with its high wheat gluten and sedimentation values (36.17 % and 40 ml) were observed as high quality bread variety while Mirzabey, Sert Buğday, Lavanta, Çeşit 1252 and Kunduru-1149 were found damaged from the sunn pest. Rheological properties of dough obtained from the Bezostoja wheat flour were detected highest whereas rheological properties of durum wheat varieties were found lower than bread wheat varieties. Especially physicochemical and rheological quality of Kunduru- 1149 was found to be very low.

Keywords: bread wheat, durum wheat, gluten, sedimentation, rheology,

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Traceability and Turkey's Regulations in Agricultural Sector in EU Process

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Abstract

In Turkey, the studies about security for food are being made focused on “traceability” in Agricultural and Food sector. Traceability is a system containing tracing food, the animal that food is obtained, feed and the substance that is planned or expected to be mixed with food and all the steps of production, procession, distribution of expected material. With this system, from where, which field, with which distribution way the product with a harmful substance comes can be determined. As of the date of, 28 January 2002, with the regulation of Parliament of European Union numbered 78/2002 “Regulation for Food Safety and Consumer Safety” are brought for the food products that are imported. Turkey effected from this regulation considerably, because according to this regulation, as the date of 1 January 2005 no food suiting EU food law will go into EU borders. Thus, in Turkey also, with the law numbered 5179 which came into force on 1 January 2005, tarecebility necessitated for both in and out market. Although, there ara different tracebility systems in the world, the only system with international information standarts and advised by United Nation is EAN-UCC system. EAN-UCC system is implemented by defining radio frequency, barcod or with the help of gadgets such as RSS. Especially barcodes has important roles because they remove the difficulties of entering data. Barcodes enables to number and tag commercial products with a standart. Meeting Turkey with EAN barcode system is mediated through TOBB in late 1988. TOBB became a member of EAN International to solve the problems in defining commercial products, and founded Global Standarts Center within itself to implement EAN-UCC system in Turkey. However, food tracebility's being as projected is becoming late because of the complicated construction of the chain under Turkey's conditions, some problems faced in agricultural sector, the traditional ways and lack of infrastructure. Thus, by revealing current system, what to do in order system to gain a more professional structure is argued in this study

Keywords: Traceability, EU, Turkey, EAN-UCC, Agriculture Sector

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Determination of Morphological Characters of Some Kenaf (*Hibiscus cannabinus* L.) Genotypes under the Harran Plain Conditions

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Abstract

It is necessary to find new paper raw materials instead of cutting forest trees for producing pulp. One plant which can be alternative to such sources is the kenaf plant. Kenaf is a natural source of fibre which is produced from its stems. Aside from using for production of fibre, kenaf is also preferred in the cellulose industry. In order to determine the development conditions of kenaf genotypes within a region, it is required to know morphological characters of the plant variety. This study was carried out at the research area of Harran University, Faculty of Agriculture, Eyyübiye Campus in 2015 growing season to determine morphological characters of three kenaf (*Hibiscus cannabinus* L.) genotypes (Raz, EF-1 ve Gmail-B). The trial was carried out in randomized complete blocks design with 3 replications; each plot consist of 4 rows with 10 m long, 70 cm row spacing and 12-15 cm intrarow spacing. As a result of the study, it was determined that dry stem yield changes between 730 kg to 913 kg per decar, wood-bark percent between 64% to 70%, plant height between 315 cm to 345 cm, stem diameter between 16.34 mm to 18.86 mm according to genotypes and between 5.80 mm and 24.54 mm according to plant parts (base, middle and top diameter), number of seeds per capsule between 22.0 to 24.5, weight of 100 seeds between 1.78 g to 2.30, protein ratio between 23.10% to 24.23%, and the oil ratio between 16.90% to 23.90%. Among the kenaf genotypes used in the trial, EF-1 variety was found to have higher yields than other genotypes with regards to dry stem yield.

Keywords: Harran Plain, kenaf, Genotypes, Morphological characters

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Evaluation of the effect of textile wastewater irrigation on growth of 'Golden Delicious' apples grafted on MM 106 rootstock

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Abstract

Different and practical solutions are required to achieve the sustainability of resources because of the increasing competition for water resources, the pollution of resources, the limitations of drought and the adverse impacts of contaminated water on human health. The reuse of wastewater reduces both the consumption of limited resources, and the negative effects on the environment. In this work, the effect of textile waste waters on the development of 'Golden Delicious' apple seedlings grafted onto an MM 106 parent was examined over a one-year period. Municipal water (T0) prepared as a control sample, 1/3 diluted waste textile water (T1) and undiluted (T2) raw waste textile water were used as the three different irrigation water samples. Three replications of each test were performed on three random samples each time. The WPCR (1991) criterion confirms the suitability of T1 for irrigation purposes, but it claims necessary precautions should be taken when using T2 as irrigation water. In terms of sodium adsorption ratio (SAR) values, all irrigation water samples were classified as class I according to irrigation water quality classification. The SAR and EC data show T0 classified as C2S1, whereas T1 and T2 were classified as C3S1, according to the US salinity hazard diagram (1954). When examining the effects of T0, T1 and T2 irrigation water on seedling growth, it was found that T1 irrigation water significantly increased the weight, the shoot length and the diameter of the seedling ($p < \alpha$, $\alpha = 0.05$). The highest values of dry weight and matter gain in seedlings were observed with T1 irrigation water ($p < \alpha$, $\alpha = 0.01$). When taking certain aspects into account, such as the proper treatment of wastewater, the necessary drainage and the appropriate irrigation methods, then 1/3 diluted textile wastewater can be used as agricultural irrigation water for the apple seedlings.

Keywords: Malus domestica, sapling, textile wastewater, water quality, wastewater irrigation



Animal Welfare Criteria for Dairy Cow Barn Design

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Abstract

Environment is essential criteria for cattle productivity. The main contributors to heat stress including ambient temperature, humidity and wind speed. Barn is the main criteria which is provided ventilation, lighting and good air. Deficits in free stall design and maintenance have long been recognized as significant risk factors for mastitis, hock abrasions and hygromas, teat trauma and entrapment injuries of dairy cows. Uncomfortable stalls result in less frequent or shorter duration resting periods and by default, increased standing time on concrete surfaces. First, it is only within the last 10-15 years that freestall design has moved beyond static measurements of body size and focused upon the space required to lie down and rise. Cows typically rest 10 to 14 hours per day in five or more resting bouts. Well designed and managed dairy cow free stalls (cubicles) can reduce excessive standing, allow more efficient rumination, improve cleanliness, and minimize injury. The space required for a cow weighing 1300-1500 pounds to rise, recline and rest comfortably is about 48" wide and 9' long. In a recumbent position, the cow's body space occupies approximately 68 – 70" of the stall length (see Figure 1). The stall surface should slope upward (1-2") in the direction the cow lies. Appropriate construction methods which is consider cow welfare requirements can improve animal behaviour and performances.

Keywords: Animal Welfare, Dairy Cow, Barn Design

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15-17 May 2017

The Importance of Temperature Control in Wine Production

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Abstract

Temperature is one of the most important parameters in the development of alcohol fermentation because it affects process kinetics, fermentation speed, wine quality and the concentration of secondary metabolites. Yeast membrane fatty acid composition is influenced by factors such as temperature, oxygen, nutrient restriction. The yeast membrane fatty acid-acyl composition changes by temperature like other microorganisms. As the temperature decreases, the unsaturated fatty acid amount in yeast membrane fatty acid-acyl composition increases. The role of fatty acids and esters in alcoholic fermentation is important. All double bonds are in the "cis" geometric configuration, but few of them are in the "trans" configuration in unsaturated fatty acids. Unsaturated fatty acids can be converted to the "trans" configuration by heating. Increment of temperature which formed during fermentation and external source can be caused a change in the configuration of fatty acids in the cell membrane of the yeast. Fermentation proceeds slowly while it is around 15 and 20 °C. The fermentation rate is held at 15 °C is lower and longer lag phase is observed. This situation delay the achievement of the maximum number of cells, however, once the high population is reached; there is a long standing phase throughout the whole process and no regression phase. At 25 and 30 °C, a similar maximum population is reached, although the initial fermentation rate is higher than the low temperature. Temperature above 30 °C during fermentation can cause to die the yeast added grape juice or fermentation completes microorganisms that are resistant to high temperatures and unwanted products an occur in wine. Ethyl carbamate is a resultant compound during fermentation at high temperature. The presence of ethyl carbamoyl which is carcinogenic is a chemical hazard. There is no delay phase in fermentation at 35 °C, it is very quickly passes to exponential phase and reaches the maximum population in a short time. However, the stable phase is very short and cell viability is low. Although fermentation starts quickly at high temperatures, the use of sugar is less due to excess cell death. In low temperature fermentation, fermentation starts slowly but all the sugar is consumed quickly because of the number of living cells is high during the process. Fermentation at high temperature is suitable for red wine production. Low temperature fermentation is preferred for white wine production.

Keywords: Fermentation, Temperature, Yeast

Microbiological Quality of Kefir which is A Functional Dairy Product

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Abstract

In today's world, the consumers prefer to consume natural, safe, nutritive and also functional foods. The increasing demand on functional foods results in their extended utility. Probiotic dairy products are constituted an important part of functional dairy foods. Kefir which is a traditional and fermented dairy product consumed for its probiotic properties. Antibacterial, antifungal, immunostimulant, tumor suppressive, cholesterol lowering effects of kefir consumption on human metabolism were determined in several studies. Kefir which is similar to a drinking-style yogurt with its specific taste and refreshing flavour, has been still produced traditionally with kefir grains at home and also industrially with starter cultures by the dairy producers. In this study, three kefir beverage samples produced industrially and marketed, three kefir grain samples used for traditional home-scale production and three kefir beverage samples produced from these grains in the laboratory by traditional methods were analysed. Total mesophilic aerobic bacteria, total psychrophilic aerobic bacteria, acetic acid bacteria, lactic acid bacteria, yeast and mould, coliform bacteria, *Escherichia coli* and *Staphylococcus aureus* analyses were performed to determine the microbial quality of kefir beverage and kefir grain samples, and the results were between 5.74 and 8.50 log CFU/ml-g, <1.00 and 7.44 log CFU/ml-g, 5.28 and 7.55 log CFU/ml-g, 1.24 and 7.91 log CFU/ml-g, <1.00 and 5.82 log CFU/ml-g, <1.00 and 3.04 log CFU/ml-g, <3 and >1100 MPN/ml-g, <3 and 49.66 MPN/ml-g, respectively. *Staphylococcus aureus* could not be detected in any of the samples. The results of kefir samples -particularly purchased from markets- showed that the production process of kefir which is consumed as a probiotic food should be revised and the conditions necessary for microbial viability should be modified to increase its bioavailability.

Keywords: Kefir; grain; probiotic; functional food.

The Effectiveness of Unripe Grape Products on Native Flora of Some Salad Vegetables

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Abstract

The foodborne outbreaks are increased with the consumption of raw products. In this context, salads are also considered as high risk foods within under sanitation conditions. Special attention is paid to those fresh products which are prepared with fresh-cut-produce such as lettuce, carrot, parsley etc. The plant based products like fruit and vegetables or their juices, herbs and spices have been used to extend the shelf life of fresh-cut-produce with ensuring the food safety and quality. However, these plant based products are also used for acidifying and flavoring agents for salads. Verjuice and sour grape sauces are one of these agents which are consumed in Mediterranean and Aegean region. In this study, ten unripe grape samples were analyzed. Five samples are verjuice and the others represent sour grape sauce. The pH, titratable acidity, ascorbic acid, total phenol content, FRAP and TEAC analysis were performed to determine the physico-chemical properties and the antioxidant capacity of the samples. The effectiveness of verjuice and sour grape sauce were investigated on native flora of lettuce and carrot. The mean values of pH, titratable acidity, ascorbic acid, total phenol content, FRAP and TEAC were 2.41, 3.83%, 1.81 mg/100mL, 473.96 mg/L, 0.104 µmol TE/mL, and 0.421 µmol TE/mL, respectively. The native flora of lettuce and carrot were counted as 5.52 and 4.57 log CFU/g. Generally, native floras of both vegetables were significantly inactivated as soon as the treatment with products ($p < 0.05$). The inhibitory effect was increased by treatment time. After 10 minute treatment, the products decreased the number of native flora of lettuce and carrot to 1.78 and < 1.00 log CFU/g. The verjuice and sour grape sauces are particularly rich in antioxidants and organic acids have antimicrobial effects on microorganisms. So, the unripe grape products could be considered as natural antimicrobial agents for food safety.

Keywords: Antimicrobial; verjuice; sauce; unripe grape; carrot; lettuce.



Tavuk Etinin ve Yumurtasının Fonksiyonelliğine Yönelik Besleme

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Özet

Normal beslenmenin yanısıra insan sağlığını etkileyen bir veya birkaç madde ile zenginleştirilmiş gıdalar fonksiyonel gıdalar olarak tanımlanmaktadır. Tüketiciler bu ürünlerden sağlıkla ilgili yararlar beklemektedirler. Fonksiyonel tavuk eti ve yumurtası üretimi amacıyla kanatlı karma yemlerine omega-3 yağ asitleri, antioksidanlar, selenyum ve fenolik bileşikler ilavesine yönelik çalışmalara önem verilmektedir. Fonksiyonel tavuk etinin ve yumurtasının üretiminin ve gıda pazar payının küçük olmasına rağmen tüketicilerin sağlık açısından bilinçlenmeleri ile üretimlerinin artacağı tahmin edilmektedir. Bu makalede fonksiyonel tavuk eti ve yumurtası üretimine yönelik besleme uygulamaları ile bu hayvansal ürünlerin fizyolojik, ekonomik ve yasal yönlerinden bahsedilecektir.

Anahtar Kelimeler: Antioksidanlar, fonksiyonellik, omega-3, tavuk eti, yumurta

Production of Noodle With High Dietary Fiber Content From Chestnut Flour

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Abstract

In recent years, the product variety in functional food industry has improved due to increasing attention of people to healthy eating. With respect to this, it is aimed to increase the use of chestnut flour in the production of noodle which is happily consumed, having low cost, having long shelf life among grain products, and to increase the total dietary fiber (TDF) amount in noodle. In addition to rich nutrients in it, since grown in totally natural conditions, chestnut has been used for a long time for healthy eating and daily dietaries. It basically is composed of carbohydrate, water and fat in very small amounts. When grinded, chestnut becomes a lightly colorful flour. This flour is used in puddings, bakery products, bread, cereals, soup and sauces. Noodle produced for this study is a pasta-like semi-prepared food obtained using flour, water and salt. In the production of conventional noodle, chestnut flour in six different portions (100:0-control, 95:5, 90:10, 80:20, 70:30 and 60:40) was added instead of wheat flour and a product improved in functional properties was produced. Chemical and some nutritional properties of chestnut flour and noodle were investigated.

According to the results of the study, a noodle that was improved in terms of nutrients and dietary fiber amount of which was increased is produced. It was investigated that chestnut flour has a total dietary fiber value of 23.57%. when chestnut flour was added to noodle in different portions, the value of TDF increased from 2.78% to 10.77% in average compared to control noodle sample and it was found significantly high ($p < 0.05$). According to result of different studies, it is predicted that dietary fiber is protective against bowel cancer and preventing constipation. Due to functional and technological properties, there are many positive effects of dietary fiber on health.

Keywords: noodle, chesnut flour, total dietary fiber, nutritional properties, functional properties

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The effect of flaming and cultivation on weed control in corn production*

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Abstract

The use of propane flaming in combination with cultivation could be a potential alternative control method in combating weeds in corn production. Field experiments were conducted at the experimental field of Agricultural Faculty of Inonu University, Malatya/Turkey to determine the level of weed control and the response of corn seed yield and its components to flaming and cultivation using the flaming equipment developed at the Inonu University and Uludağ University. The treatments included weed-free control, weedy season-long and different combinations of broadcast flaming and mechanical cultivation (inter-row). The flaming treatments were applied at V2-V4 (2 leaf–4 leaf), V4-V6 (4 leaf–6 leaf), and V10–V12 (10 leaf – 12 leaf) growth stages. Propane doses were 60 kg ha⁻¹ for broadcast flaming treatments. At the end of the experiment, the corncob length, plant height and yield values of the corn were determined. The highest corn yield was obtained from continuous weed control (8733.2 kg ha⁻¹), this was followed by twice (7306.3 kg ha⁻¹) cultivation application. The highest corncob length was obtained from the continuous weed control plot (14,7 cm). In the plant height, the highest value was obtained flaming twice (V2-4 and V10-12). The lowest yield and yield components were obtained from the continuous weed control application. It may be suggested that the application of flaming in the weed control of the corn can increase the yield and thus may be used especially in organic agriculture.

Keywords: Flaming, cultivation, weed control, corn,

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15-17 May 2017

The Role of Biopesticides in Crop Protection

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Abstract

Agriculture is adversely affected by numerous pests like bacteria, fungi, weeds and insects. Managing pests in ways that leave little or no toxic residues, have minimal impact on non-target organisms, and are not susceptible to pest resistance has always been a challenge in modern agricultural systems. Over years, chemical pesticides have made a great contribution to the management of pests and diseases. However, their widespread and long-term use has severely affected both the abiotic and biotic components of the environment. Therefore, there is an increasing social pressure to replace them gradually with ecofriendly alternative methods. One of the promising alternatives has been the use of biopesticides, which are living organisms such as plants, nematodes, and microorganisms including bacteria, viruses, and fungi or natural products derived from these organisms, that are used to suppress pest populations. Global interest and the demand for nature-based biopesticides has been increasing steadily worldwide. The global biopesticides market is growing at an annual rate of 15 percent, the number of biopesticides is rapidly expanding and various products have been developed to manage a variety of important agricultural pests and diseases. As the prevalence of chemical or synthetic pesticides in crop protection would continue, human, animal and environmental health concerns would play a key role in driving the usage of biopesticides.

Keywords: Biopesticides, Crop protection, Pest management

The Effects of Different Raised Bed Type on Organic Tomatoes Grown in Field

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Abstract

This study was carried out to determine the effects of different raised bed type (raised bed and gable raised bed) with flat planting practices as mulching and uncovered on growth, development, earliness and yield of Töre F1 (*Solanum lycopersicum* L.) in field. According to the results, the highest plant height (171.4 cm) and stem diameter (18.4 mm), first flowering (17.3 days), first fruit set (21.3 days) with the highest yield (3.14 kg) were detected is obtained from black PE mulch applied standard raised bed type. In this study, the lowest values were obtained from plants planted flat. In this study, a significant effects of different raised bed type and mulching were determined on plant growth development, earliness and yield ($P<0.05$).

Keywords: Tomato; raised bed; mulch; organic; yield

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Developing a New GIS Based Methodology for Agricultural Planning

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Abstract

In this R&D study, a new methodology based on geographic information systems (GIS) was developed to identify and map the most suitable agricultural areas of 14 target plants (cherry, sourcherry, peach, grape, blackberry, walnut, almond, medical mint, rosehip, lavender, black cumin, linen, poppy, kinoa) in Turhal district of Tokat province. The developed methodology is based on (1) determining the specific ecological requirements of the focused plants by literature search, (2) transforming these requirements into a query table in the GIS environment, (3) creating an ecological (topographic, climatic, soil, geological, forest, etc.) spatial database, (4) spatial analysis of the created database, (5) identification and mapping of the most suitable areas for the target plants, and (6) associating the determined areas with European Nature Information System (EUNIS) habitat types and Normalized Difference Vegetation Index (NDVI) classes derived from LANDSAT-8 OLI imagery. The developed methodology was tested and proved robust. A patent application procedure has been started for the developed methodology that is thought to be a breakthrough in agricultural planning. This R&D project was funded by the Turhal District Governorate Village Service Delivery Association, and conducted in 2016 by the Biyonomi Technology and Tourism Group (BTTG) Ltd. under the structure of Tokat Teknopark Inc.

Keywords: Agricultural planning, GIS, methodology development, remote sensing

An Alternative Food Additive: Chestnut Flour

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Abstract

Today, conventional food items are turning into new food products due to developed technologies in recent years and enrichment of foods with different nutrition items. Consumers have shown a tendency to innovative food products because of emerging problems of malnutrition and rapid growth of population. In this study, usage areas in food industry and chemical and nutritious characteristics of chestnut flour obtained from chestnut and can be used as alternative food additive. Chestnut is a closed-shell fruit of trees forming *Castanea* species of the *Fagaceae* family and edible seeds of these trees. For the production of chestnut flour, chestnuts are washed, separated with respect to the sizes, kept in water, separated from the shells, grinded, dried and packed. In order to develop new products, use of chestnut flour in puddings, in bakery products, in cereals, in soups and sauces is extended. Chestnut flour can also be used for celiac patients due to being gluten-free as well as its nutritious characteristic. The fact that the total dietary fiber amount is 23 % will be helpful for the developing of products with high fiber content. In was investigated that usage of chestnut flour as a functional component in snack foods and addition of it to grain-based foods, enhance texture, color and sensational characteristics and some nutrient contents (high dietary fiber, essential amino acids, E and B group vitamins, minerals like K, Mg and Fe) of foods. The main purpose of product development is to create a healthy and balanced nutrition style for people by providing high nutritious value and reliable products. In accordance with this, it is aimed to increase new studies, to strengthen the market of new products and to increase awareness for development of flours of fruits/vegetables including valuable nutrition items as well chestnut flour as alternative food additives.

Keywords: chesnut flour, nutritional properties, food additives

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15-17 May 2017

Poly(lactic acid) Films in Food Packaging Systems

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Abstract

Poly(lactic acid) (PLA) is a non-toxic, compostable biobased material derived from starch and/or sugar and has high mechanical strength and plasticity. It is accepted as GRAS (Generally Recognized As Safe) by the Food and Drug Administration (FDA) and suitable for using in food and beverage packaging. PLA is primarily obtained from lactic acid which can be produced from renewable substances such as potato, wheat and corn starch. Petroleum based polymers cause an increase in fuel energy utilization and greenhouse gas emissions, however PLA is environmental friendly. Various polymers (protein, polycaprolactone (PCL) and polyhydroxybutyrate (PHB)), fillers (wood, flax, ramie) and additives have been combining with PLA in order to develop the performance of film and reduce the cost. On the other hand, PLA plays an important role in nanotechnology applications. Nanofillers like clay, montmorillonite and silica can be used for fortifying PLA composites. As a packaging material, PLA has a potential for manufacturing flexible films, extruded packages, containers of yoghurt, bottled water and juices, cups and lunch boxes. Moreover, in antimicrobial packaging, PLA is an excellent material which are able to be successfully incorporated with plant extracts (e.g. lemon), essential oils (e.g. oregano oil), enzymes (e.g. lysozyme) and metals (e.g. silver) in order to develop antimicrobial characteristics. In this review, the significance of PLA based packaging systems in food applications are discussed.

Keywords: Poly(lactic acid), food packaging, starch

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15-17 May 2017

A Review on Cultural Landscape Heritage in Gaziantep City

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Abstract

Cultural landscape inventory studies are important for understanding, evaluating and protecting the historical value of sites. The aim of this study is to put forward the cultural landscape heritage values, and the effects of rapid urbanization on these values, in the city of Gaziantep, one of the oldest settlements in Turkey. Open, semi open and closed spaces (structures related to historic pattern, paths, squares, green spaces and other physical components), and their relationships with the urban environment have been investigated to detect the past and present situation of physical developments. Literature research, visual analysis (photographs, maps and personal observations), and geographic information systems technologies have been used to evaluate the data. As a result of the study, evaluations and planning suggestions were produced in terms of integration of cultural landscape heritage with urban environment.

Keywords: Cultural landscape heritage, Urbanization, Gaziantep.

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Important Carbohydrate Fractions and Antioxidant Activity of Breads Produced with Different Bran Fractions

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Abstract

Grain is one of the basic food products consumed by humans since ancient ages. Although generally white bread is consumed worldwide, in recent years consciousness of consumers increased about their health and the interest in various kinds of breads contains bran increased. Aim of this study is to produce breads with different fractions of wheat bran and to determine the starch fractions which are important in terms of nutrition. Three different levels (10, 20 and 30%) of fine and coarse bran were used for the production of bread. Chemical properties (proteins, total fat, ash etc), functional properties (antioxidant activity total phenolic and flavanoid content) and total glucose (TG), rapid usable glucose (RUSG), total starch (TS), rapid digestible starch (RDS), slow digestible starch (SDS) and resistant starch (RS) contents and starch hydrolysis index (SHI) of the breads were determined. It was found that breads with fine bran were richer in total phenolic and flavanoid materials as well as the antioxidant activities than coarse bran bread. Both fine and coarse bran breads decreased TN, RS and RDS contents and increased SDS content. In addition SHI was lower in coarse bran bread. As a result, coarse bran bread is healthier than fine bran bread.

Keywords: Digestibility, Fine Bran, Starch

Rheological Properties of Hydrothermally Treated Wheat Bran

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Abstract

Bran, is produced as a byproduct of milling process. It is separated from the flour during grinding and which consists of outer layers of wheat grain including aleurone layer. In recent years, since people have become more conscious towards the healthy foods, this valuable part of grains, not generally consumed by humans, has been started to be used for the production of different food. However, direct addition of bran into dough causes various negative results such as hardening of inner structure, dark crust color, bitter taste, decrease in fermentation tolerance and sensitivity towards mold growth. The aim of this study is to treat wheat bran hydrothermally at different temperatures 130°C, 140°C, 150°C and 160°C and determine rheological properties of wheat dough enriched with hydrothermally treated wheat bran (10, 20, 30, 50, 100%). For this purpose chemical properties (total carbohydrate, lignin, uronic acid, ash etc), functional properties (antioxidant activity (TEAC, FRAP and DPPH) and phenolic content) of hydrothermally processed bran were determined, rheological properties of wheat dough enriched with hydrothermally treated wheat bran were investigated by using mixolab device. Total phenolic content and antioxidant activity hydrothermally treated bran increased with the increase in the treatment temperature and addition of hydrothermally treated bran increase water absorption capacity but did not change development time and dough stability.

Keywords: Hydrothermally, Functional properties

Effects of Dietary Supplementation of Glycerol on Performance, Egg Quality and Egg Yolk Fatty Acid Composition in Laying Hens

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Abstract

This study evaluated the performance and the quality and fatty acid profile of eggs from laying hens, fed with diets, containing different levels of glycerol replaced by acidulated sunflower soap stock. A total of 60 44-week-old Hy-Line W36 laying hens were distributed according to a completely randomized experimental design into four treatments, consisting of glycerol substituted of acidulated sunflower soap stock dietary inclusion levels (0, 25, 50, and 75 %), with five replicates of three birds each. Dietary treatments had no significant effect on egg production, feed intake, feed conversion ratio, egg weight and egg mass of laying hens. The inclusion of glycerol in the diet of laying hens had no significant effect on egg specific gravity, egg shell breaking strength, egg shell weight and egg shell thickness, egg shape index, albumen index, haugh unit, albumen pH, yolk pH and egg yolk color values L and b but to add glycerol in diets decreased a values in egg yolk . The inclusion of glycerol in the diet of laying hens had no significant effect on stearic, oleic, linoleic and linolenic acid contents of egg yolk. Palmitic acid content of egg yolk was significantly decreased and palmitoleic acid content of egg yolk significantly increased with the higher levels of dietary glycerol supplementation.

Keywords: Glycerol; Performance; Egg Quality; Laying Hens; Fatty Acid

Possible Use of Canopy Temperature in irrigation scheduling of pumpkin seed plants

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Abstract

Sustainability in irrigated fields totally depends on irrigation management. Irrigation scheduling is the key issue in the effective use of the water resources in the agricultural sector. In present study, possible use of crop water stress index (CWSI) obtained from measured canopy temperature was investigated in irrigation scheduling of pumpkin seed plants. Experiments were carried out in randomized blocks design with 3 replications over the experimental fields of Erciyes University in 2016. Irrigation scheduling was made up by applying different levels of irrigation water depleted in the 60 cm of effective root zone (I_{100} , I_{80} , I_{60} , I_{40} , I_{20} and I_0). The relationship between plant water consumption (ET_c) and CWSI was identified as $ET_c = -439.6 * CWSI + 593.24$ with $R^2 = 0.90$ while the relationship between seed yield and CWSI was identified as $Yield = -99.04 * CWSI + 131.73$ with $R^2 = 0.97$. It was concluded based on present findings that CWSI could be used in irrigation scheduling of pumpkin seed plants and irrigations should be performed when the CWSI value is equal to 0.08.

Keywords: irrigation scheduling, pumpkin, Canopy Temperature

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15-17 May 2017

Effects of Intermediary Metabolism Stimulants on Growth Performance, Carcass and Liver Weights and Meat Nutrient Composition of Quails

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Abstract

Aim of this study with addition of the components of D-aspartic acid, cysteamine, L-glutamine, L-arginine to basal rations at the level of 90 mg/kg to determine the effects of growth performance, weights of carcass and liver, chest meat pH and color values and nutritional composition of chest meat in quails. In the experiment of growth performance, 500 quails in one day age were used without gender discrimination. According study results that treatments were not effective on average live weight and increase of weight gain. The effects of treatments on feed consumption and feed conversion ratio, carcass weight at the end of experiment, liver weight, chest meat pH, and color values were not significant. Effects of treatments on dry matter contents values of chest meat were significant ($P < 0.05$). The effects of treatments on the values of chest meat crude protein, ash and fat were not significant. Effects on growth performance in quails were not significant fed with of 90 mg/kg level of the components of aspartic acid, cysteamine, L-glutamine, and L-arginine. However with considering previous studies suitable doses must be determined and used to see the effects of these components.

Keywords: D-aspartic acid, cysteamine, L-arginine, L-glutamine, quail

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15-17 May 2017

Energy Production by Cultural Woody Biomass and Its Economy

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Abstract

Energy consumption is also increasing due to the growing population and developing technology in the world. Energy is a basic input that is used in every area such as lighting, heating, industry, transportation, communication, and so on. The energy needs of mankind are usually met from the natural resources in nature. Natural resources that must be managed in a sense of conservation-use balance are the most important assets. Therefore, it is important that the renewable energy resources are protected, expanded, developed and rationally utilized. As the energy requirement of mankind will last forever, energy production from forests and cultural woody biomass is also gaining importance. Our country has a rich potential for renewable energy sources and especially woody biomass production and it is necessary to increase energy production by passing this potential action. In this study, biomass production from woody tree species with the ability to shoot, fast-growing and operated only to produce wood, grown by human for three-five rotation ages in new culture areas, the production of energy by burning the biomass in combined heat and power plants and the economics of this production are handled. For this purpose, the necessary literature was reviewed and the studies conducted in the countries realized the energy plantation programs were examined and the situation in our country was evaluated. As a result, it is understood that Internal Rate of Return of a combined heat and power biomass plant in our country is 31% and appropriate to operate economically for at least 16 years. It is also determined that the annual amount of employment by the biomass plant is 5,760 man-days. Thus, a clean and livable environment, energetic external dependency reduction, contribution to foreign exchange stake and the country's economy, and employment opportunities to people living in rural areas will be provided.

Keywords: Combined heat and power plant, Cultural woody biomass, Energy, Natural resource, Turkey

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Management of Golf Courses

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Abstract

Golf is a game to aim of putting a golf ball from a starting point to a hole by clubs under the Rules of Golf. Golf is played very popular because of appeal to people of all ages, being together with nature, need little effort, mostly self and against course competition instead of opponent, giving an opportunity for communication and social affairs. This presentation is intended to introduce the golf sport and to briefly explain the establishment and maintenance of golf courses. Today there are about 20 golf courses in our country. This count is quite small, comparing more than 4000 courses in continental Europe and 2500 golf courses in the UK, nevertheless our country has become one of the few places in terms of golf tourism destination. Especially in the Mediterranean Region, there is a chance of being one of the important branches of alternative tourism in order to diversify tourism and spread all over the year. Therefore the professional maintenance of golf courses have been become very important. A golf course occurs teeing (starting) areas, water hazards, roughs, golf cart paths, bunkers (sand hazards), fairways, green and holes. Golf course management can be handled in two separate sections as course establishment and maintenance. Establishment of Golf course; selection of grass type, soil selection and preparation, drainage and irrigation system, turf sowing or planting, growing and maturation. Maintenance of golf courses includes mowing, irrigation, fertilization, pest and disease control, other maintenance practices (Control of thatching, verticutting, sanding, rolling and overseeding). Each of these maintenance practices must be meticulously handled by experience. In this article, management technics of golf courses and some solution advices will be discussed.

Keywords: Golf courses, mowing, irrigation, fertilization.

Evaluation of Yield and Yield Components of Triticale Varieties under Different Nitrogen Levels

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Abstract:

The adaptation of triticale cultivars with different nutritional demands and yield potential hinders generalized recommendations for nitrogen fertilization. The study was designed to evaluate the effects of different nitrogen fertilization levels (0, 60, 90, 120 and 150 kg ha⁻¹ of N) on the agronomic performance of two triticale cultivars in 2015-2016 growing season. A split plot layout within randomized complete block design with 3 replications was used in both years. Combined analysis of variance of nitrogen applications of two cultivars showed highly significant ($p < 0.01$) difference between the cultivars, nitrogen applications and interaction. There was genetic variability in response to nitrogen fertilization in between cultivars. The biggest increases in yield were observed under a more suitable water regime. The higher performance of yield components was associated with higher application nitrogen level (150 kg ha⁻¹ of N). On the other hand; the higher performance of yield components was associated with higher nitrogen fertilization levels. The results of the this study has been recommended that it should be use and study higher nitrogen application levels than 150 kg ha⁻¹ of N to see the breaking point of nitrogen levels in the next triticale studied.

Keywords: Nitrogen, yield, components, triticale, regression.

Optimization of Gluten-Free Bread Formulation by using Response Surface Methodology

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Abstract

Celiac disease is a serious genetic autoimmune disorder, defined as gluten intolerance. Celiac patients have to adhere to a strict gluten-free diet throughout their lifetime for treatment. The nutritional content of bakery products produced for the gluten-free diet is low. Because such products are usually produced from starch based sources. So recent studies have focused on increasing the nutrient content of gluten free bakery products. This study was aimed to optimize the gluten free bread (GFB) formulation by applying Response Surface Methodology (RSM). Chickpea and corn flour and potato starch were used to increase the nutrient content and quality of GFB. GFB was produced by using 15 different GFB flour formulations which were generated with RSM and after baking some quality parameters of them were evaluated. According to results of these tests, important stage of each parameter was detected by using Anova table and model coefficients of RSM. Mathematical models expressing the relationship between process variables and each response were constructed by performing multiple linear regression analysis. For this purpose; linear, quadratic and interaction effect terms were added respectively in to the models and increase in the sum of the squares were analyzed. The regression coefficients and the significance of the models were shown that specific volume, firmness, crust color, general acceptability and Delta-E values can be used for optimization of GFB flour formulas. As a result, gluten-free flour formula such as; 53.15% rice flour, 24.53% chickpea flour, 12.32% potato starch, 5.00 % corn starch- formed by optimization using RSM can be used at making GFB with high nutritional value and high quality.

Keywords: Celiac, gluten free, bread, chickpea, corn, flour

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15-17 May 2017

Conventional Drying and Color Changes of Anchovy (*E. encrasicolus*)

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Abstract

The European anchovy (*Engraulis encrasicolus*) is one of the primary fish species caught in Turkey and nearly 60% of total fish production are pertained to anchovy. Anchovy could be used for producing fish meal and fish oil or consumed directly. In various countries fisheries and fish products are usually conserved with the aid of methods such as salting, drying, smoking, marinating, cooking or combinations of these techniques in order to prolong the shelf life of product. Unfortunately, there are few studies about drying or processing of anchovy in current literature, however it is a favourite fish in Turkey. In this research, convective drying kinetics of anchovy (contained nearly 60% water on w.b.) were investigated at 70, 80 and 90°C with or without salting. For salting operation, the amount of NaCl was 20%, 30% and 40% of fish dry matter and anchovies were placed in glass jars and waited for 6 days at 4°C. 13 semi-empirical mathematical models were utilized for fitting experimental dehydration data and Cubic model was the best for describing drying behaviours of both salted and unsalted anchovies. On the other hand, color values (L^* , a^* , b^* , ΔE (total color change) and C (chroma)) of samples were evaluated and anchovies dried at 90°C had the highest L^* and ΔE levels with respect to others.

Keywords: Drying, dehydration, salt, anchovy, fish, color

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15-17 May 2017

Impact of Nitrogen Fertilization Doses on Grain Yield and its Components in Barley Varieties

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Abstract

The effect of agronomic applications and environmental factors on grain yield and its components are very important and complicated in barley. Therefore, grain yield and its components highly have been influenced by agronomic applications and environmental factors. On the other hand; the nitrogen application has been effect to quality of barley. That is why; the research was designed to assess the effects of different nitrogen fertilization levels (0, 10, 20, 30 and 40 kg ha⁻¹ of N) on the agronomic performance of five barley cultivars in two growing seasons. Split plot layout within randomized complete block design with 3 replications was used in both years. Combined analysis of variance of nitrogen applications of five cultivars showed highly significant ($p < 0.01$) difference between the cultivars, nitrogen applications and interaction. There were genetic variability among cultivars on grain yield and yield components in response to nitrogen fertilization. The results showed that biggest increases on yield and yield components were observed in 40 kg/ha⁻¹ nitrogen fertilization level, while thousand grain weight was the biggest under without nitrogen application. The higher performance of yield and yield components was associated with higher nitrogen fertilization in regression analysis. The results of the this study has been recommended that it should be use and study higher nitrogen application levels than 40 kg ha⁻¹ of N in the next barley studied.

Keywords: Nitrogen, yield, components, Barley, regression.

Vegetative and Generative Characteristics of Chickpea as Effected by Irrigations at Different Growth Stages

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Abstract

This study was conducted over the experimental fields of Erciyes University in 2016 to investigate the effects of irrigations applied at different growth stages on vegetative and generative traits of chickpea. Experiments were conducted in randomized blocks design with 3 replications. There were 7 irrigation treatments as of I1: rainfed, I2: pre-bloom single irrigation, I3: single irrigation at the beginning of blooming, I4: single irrigation at 50% pod set, I5: two irrigations at 50% bloom and 50% pod-set, I6: two irrigations at pre-bloom and 50% pod-set, I7: full irrigation. Plant weight, plant height, first pod height, number of branches per plant, number of pods per plant, number of kernels per pod and 100-kernel weight were investigated. Plants heights varied between 32.15 g (I1) and 62.06 g (I7) ; plant heights between 58.32 cm (I1) and 87.59 cm (I7); first pot heights between 36.62 cm (I1) and 45.72 cm (I7); number of branches per plant between 1.88 (I4) - 3.13 (I7); number of pods per plant between 21.93 (I1) and 36.32 (I6); number of kernels per pods between 20.93 (I1) and 36.90 (I4); 100-kernel weight between 41.26 g and 46.69 (I5) g. Amount of applied irrigation water varied between 85.6-323 mm, plant water consumptions varied between 262-569 mm. Irrigation treatments had significant effects on all traits ($p<0.05$).

Keywords: Chickpea, Irrigation, Growth Stage

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Investigation of usage possibilities of cover crops in weeds control in apricot orchards*

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Abstract

Turkey ranks first in the world with 500 thousand tons of apricot production per year. Turkey is the first in dry apricot exports and holds 65% of this market. There are many factors affecting yield in apricot orchards, one of the most important factors is weeds. The use of cover crops in weed control in fruit orchards is one of the common alternative control methods. This study was carried out in experimental fruit orchard in Agricultural Faculty of Inonu University to determine the ability of cover crops to suppress the weeds in the years 2015 and 2016. Annual cover crops were used in experiments. As winter cover crops *Vicia villosa* Roth., *Vicia pannonica* Crantz, mixture of *V. pannonica* and triticale (70% *V. pannonica* and 30% tritikale), *Phacelia tanacetifolia* Benth were used. *Fagopyrum esculentum* Moench was chosen as a summer cover crop. The experiments were set up with four repetitions and 8 characters, according to the design of random blocks. In the experiments, non-controlled weed parcel, mechanical control and herbicide applied parcels were also kept. In order to determine the biomass of the cover crops and weeds, the plants in the 0.25 m² frames were collected from 4 different places during the flowering period and all were dried in oven. The pre-mow weed density was also determined. As a result of the experiment, the lowest weed dry biomass weight was obtained from *P. tanacetifolia* and *F. esculentum* parcels. According to the control, the highest % reduction in weeds was observed in the *P. tanacetifolia* and *F. esculentum* parcels. This research has revealed that cover crops can be used as live mulch in integrated weed management programs in apricot orchards.

Keywords: Apricot, cover crops, weed control

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Apple Production Potential in Central Anatolia Region

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Abstract

For the purposes of this study, data related to apple production in Ankara, Aksaray, Çankırı, Eskişehir, Karaman, Kayseri, Kırıkkale, Kırşehir, Konya, Niğde and Nevşehir provinces, from the Central Anatolian Region, for the 2012-2016 period have been acquired from the Turkish Statistical Institute and indications such as planted area, production amount for the Golden, Starking, Amasya and new apple types have been calculated and the results have been tabulated and interpreted. According to the study findings, the collective orchards in Turkey's apple production had a decrease of 33675, 69800 and 14817 decare respectively for the Golden, Starking and Amasya varieties; while in Grannysmith variety, there was an increase of 67161 decare and in new apple varieties; there was an increase of 97360 decare. Looking at the production amounts, Golden variety had a decrease of 36610 tons and Starking variety had a decrease of 183617 tons, while in Amasya, Grannysmith and new varieties there was a respective increase of 1081, 30879 and 225110 tons. Looking at the apple production data for the Central Anatolian Region, the amount of collective orchards for the Golden, Starking and Amasya varieties had a decrease of 51, 956 and 4872 decare, respectively; while in Grannysmith variety there was an increase of 1669 decare, and in the new apple varieties there was an increase of 25460 decare. When assessing the production amounts, in Starking variety there was a decrease of 23005 tons and in Grannysmith variety the decrease was 53 tons, while in Golden, Amasya and other varieties there was an increase of 6564, 16347 and 41674 tons, respectively. When analysing the apple production data in 11 provinces from the Central Anatolian Region, Niğde, Konya and Kayseri provinces had 18600, 7013 and 5861 decare of increase respectively in new varieties, while in Karaman and Ankara the Golden and Starking varieties had a decrease of 26087 and 6046 decare. In Karaman, Niğde and Konya the new varieties had an increase of 75791, 29336 and 26291 tons respectively while in Karaman, Kayseri and Niğde there was a decrease of 67643, 15283 and 4100 tons, respectively.

Keywords: Apple, Production, Center Anatolia, Planted area

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The Effect of Hydrocolloids on Gluten-Free Pasta Production

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Abstract

This study was conducted on the production of gluten-free pasta and determination of its quality criteria. Using only corn semolina does not have the ability to produce pasta dough. For this reason fifteen different gluten-free pasta samples were prepared by adding various proportions of hydrocolloids (guar gum (1.5 %), xanthan gum (1.5 %) and guar gum/xanthan gum blend (0.75/0.75 %)) and different ratio of fine corn semolina and fine rice semolina (0:100, 25:75, 50:50, 75:25 and 100:0 %). In study, control gluten-free pasta was produced using fine corn semolina and fine rice semolina. Samples were produced without gluten to be suitable (max. 20 ppm gluten) for consumption by celiac patients. Elisa test, crude ash, dry matter, cooking loss, weight increase, volume increase, sensory analysis of gluten-free pasta samples for its quality criteria were determined. Increasing the corn ratio in gluten free pasta formulation increased the cooking time and cooking resistance. The highest volume increase, weight increase and cooking time were determined with pasta sample produced with 0:100 corn- rice semolina ratio and 1.5 % guar gum addition in all gluten free pasta samples. The lowest cooking loss value was obtained with pasta sample produced with 0:100 corn:rice semolina ratio and 0.75/0.75 % guar gum/xanthan gum blend addition in all gluten free pasta samples. Cooking loss values decreased with using gums together. According to taste-odor, stickiness and resistance, it was chosen the superior gluten free pasta sample is produced with 75:25 corn- rice semolina ratio and 1.5 % xanthan gum by the panelists.

Keywords: Gluten free, pasta, gums, hydrocolloids, celiac

The effects of different germination applications on stevia seeds at low temperature

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Abstract

Stevia (*Stevia rebaudiana* Bertoni, Asteraceae) is a non-caloric natural-source alternative to artificially produced sugar substitutes. The sweet compounds pass through the digestive process without chemically breaking down, making stevia safe for those who need to control their blood sugar level. This study were to determine a suitable priming media and priming duration that would enhance the germination of stevia seeds. The experiments were set up at Battalgazi Vocational School Laboratory of Inonu University according to completely randomized design with four replication. The standard germination test was conducted with four replications of 50 seeds placed above two layers of filter paper in covered 6-cm petri dishes. Stevia seeds were primed in various concentrations of polyethylene glycol 6000 (200, 300 and 400 g·L⁻¹), NaCl (2, 3 and 4%), KNO₃ (2, 3 and 4%), glycerol (10, 20 and 30%) and boric acid (1, 2 and 3%) for one, two and three days at 25°C in darkness. Following priming, germination tests were carried out in darkness at 15°C in darkness. All priming treatments generally significantly improved germination performances (germination percentage, germination rate and spread of germination) of stevia at 15°C. The highest final germination percentage (FGP) was obtained from the seeds primed in 200 g·L⁻¹ PEG and 2% KNO₃ for 2 d (86.0%) while untreated control seeds had FGP of 45.0%. The results obtained suggested that priming of stevia seeds in 200 g·L⁻¹ PEG and 2% KNO₃ for 2 d at 25°C could be used to enhance stevia germination at low temperature.

Keywords: Stevia, different seed germination application, final germination percentage

Bark Beetle Fauna (Coleoptera: Curculionidae: Scolytinae) of the Coniferous Forests and Control Studies in Artvin of Turkey

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Abstract

Bark beetles (Coleoptera: Curculionidae: Scolytinae) are among an important the pests in coniferous forests of the Artvin of Turkey. This forest areas were effected by bark beetles at nearly 30 years. In this study, bark beetle species were determined in the coniferous forests of the Artvin forests areas of Turkey between 2010-2016. During the seven year period, which studies were conducted, surveying studies were made. For this aim, trees weakened by other insects or drought, cutting remaining and storage woods and also trap trees were checked. As a result, we found 24 bark beetle species. These species; *Hylastes angustatus*, *Hylastes ater*, *Hylastes cunicularius*, *Hylurgops palliatus*, *Tomicus piniperda*, *Tomicus minor*, *Dendroctonus micans*, *Ips acuminatus*, *Ips cembrae*, *Ips amitinus*, *Ips duplicatus*, *Ips sexdentatus*, *Ips typographus*, *Xyloterus lineatus*, *Cryphalus abietis*, *Cryphalus piceae*, *Pityogenes bidentatus*, *Pityogenes quadridens*, *Pityogenes chalcographus*, *Pityogenes bistridentatus*, *Pityokteines curvidens*, *Pityokteines spinidens*, *Orthotomicus erosus*, *Orthotomicus proximus*. Most of these insects are damaging on *Picea orientalis*, *Pinus sylvestris* and *Abies nordmanniana*. Among these species, especially *I. typographus*, *D. micans* and *I. sexdentatus* are the most common. The size of these bark beetles population was tried to keep under control using mechanical control, biotechnological control and biological control.

Keywords: Bark beetles, Artvin coniferous forest

Determination of Sublethal Effects of Some Insecticides on Pupae of Tomato Leafminer, *Tuta absoluta* (Meyrick)(Lepidoptera:Gelechiidae)

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Abstract

This study aimed at gathering data on the efficient and conscious use of insecticides applied against tomato leaf miner, *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) which was shown as an important pest of tomatoes in Antalya province, one of the most important tomato growing regions in Turkey. The larvae of *T. absoluta* were exposed to a sublethal dose (LC₃₀) of 4 insecticides registered for use in the control of the pest in Turkey, namely, chlorantraniliprole+abamectin, indoxacarb, azadirachtin and spinosad. The sublethal effect of the insecticides on pupae of *T. absoluta* was investigated. As a result, the developmental time of the pupae was significantly longer compared to the control in those treated with indoxacarb, chlorantraniliprole+abamectin and azadirachtin, while in those treated with spinosad the developmental time of pupae was significantly shorter. The female pupal weight was significantly lower t in those exposed to spinosad, indoxacarb, azadirachtin and chlorantraniliprole+abamectin which suggest an anti-feeding effect. The male pupal weight was not affected.

Keywords: *Tuta absoluta*, spinosad, indoxacarb, chlorantraniliprole+abamectin, azadirachtin, sublethal dose.

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— Cappadocia/Turkey —

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Solutions and Varnishes on Weight Loss During Combustion of Wood Materials

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Abstract

This study was performed to determine the effects of varnishing after impregnation with some chemicals on combustion properties of the black pine (*Pinus nigra* J.F. Arnold subsp. *nigra* var. *caramenica* (Loudon) Rehder) and Oriental beech (*Fagus orientalis* L.) woods. For this purpose, the test samples prepared from black pine and Oriental beech woods were impregnated according to ASTM D 1413-99 with Boric acid (Ba), Borax (Bx), Imersol-Aqua (Ia) by dipping method and Timbercare-Aqua (Ta) by brushing method. After impregnation process surfaces were coated by cellulosic (Cv), polyurethane (Pu) and water-borne (Wb) varnishes in accordance to ASTM D 3023. Weight loss of test samples after combustion process were determined according to ASTM E 160-50. As a result, the weight loss of black pine higher than Oriental beech wood. According to impregnation materials the weight loss was the highest in Timbercare-Aqua (Ta) (90.58%) and the lowest in Boric acid (Ba) (77.80%). Also, varnish materials show slightly a decreasing impact on weight loss. Test results showed that impregnation of wood materials with boric acid or borax before varnishing process to be the most effective fire protective treatment.

Keywords: Wood impregnation, Boron compounds, Combustion properties

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Nonenzymatic Browning Kinetics of Traditional Isot Production During Sun Drying

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Abstract

Turkey is one of the largest cultivators of capsicum peppers in the world after China and Mexico. Red peppers of this genus about 200.000 tons were harvested in 2014 only for the purpose of spices in Turkey. Approximately 75 % of this amount is cultivated in Şanlıurfa. The red peppers cultivated in this city are usually used for production of isot. Furthermore, isot was certificated by the competent authority with Geographical Indication (GI) regulations. In the production of traditional isot; the sliced ripe fruit of red peppers are dehydrated by sun drying onto a concrete floor for a few days (2-3 days). Then, semi-dried peppers are slightly brined with a sprinkle and put into polythene bags which thinly spread under the sunlight. Temperature of inside bags is raised and the color of fruits is slowly changed. The bags are periodically turned out and also sometimes the fruits are taken out in the nights. These processes are called terletme (like sweating). Sweating is very important process for isot quality. Kinetic of browning change was determined during direct sun drying and sweating phases of isot production. The nonenzymatic browning can be described by the zero order reaction during traditional isot production. The rate constant (k) and R² for direct sun drying and sweating were 0.0055 and 0.0124 Abs g dry matter⁻¹ h⁻¹, and 0.97 and 0.95, respectively. This study showed that the rate of nonenzymatic browning of sweating phase was significantly higher than direct sun drying phase.

Keywords: Hot pepper, Isot, Nonenzymatic browning, Kinetics

Mulberry, Dried Mulberry and Mulberry Sugar

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Abstract

In this study, some chemical and physical properties of mulberry and its specific products, which is one of the most important berry fruit in our country were examined. Mulberry; is a member of the *Urticales* family and their subfamily *Morus L.* Mulberry is a perennial fruit tree. Mulberry; is a asian region fruit, because of the origin of the cultivation and homeland resources in East China-Korea-Japan axis. Mulberry (*Morus*) types were located in 50° North and 10° South latitudes, the southeastern part of Japan, the islands of Java and Sumatra in Indonesia, the forested regions of Southern Arabia, the Caucasus, Iran, Western Asia, Western Africa and widely cultivated in temperate and subtropical regions in North and South America regions. Genotypes of Mulberry species; were used to as a fresh fruit and for production of the other products *Morus Alba*, *Morus nigra*, *Morus rubra*. In our country, Mulberry species manufacturing were located mostly in Eastern Anatolia region (Malatya-Erzincan), Central Anatolia (Ankara), Mediterranean (Kahramanmaraş) and the Central Black Sea (Samsun-Tokat). The fruit species of the Mulberry is a rich source of various nutrients components. 100 g fresh berry fruit were included; 87.5 g water, 1.5 g Protein, 0.49 g fat, 8.3 g carbs, 1.4 g fiber, 0.9 g ash, 80 mg Ca, 40 mg P, 1.9 mg Fe, 174 IU Vit.A, 9 mg thiamine, 184 mg riboflavin, 0.8 mg nicotinic acid, and 13 mg ascorbic acid (Vitamin C). In the latest times; there were considerable emphasis on the antioxidative properties of Mulberry fruits. Dried Mulberry, is a dried products of the fresh Mulberry, its produced from the fresh fruit collecting in season by carefully, classification and obtained by drying under suitable conditions. Dried Mulberry; being offered rather than the other dried products as a snack in the winter seasons. Mulberry sugar; is the final product of dried mulberry, produced by vary different suitable fruit aroma and coating materials (chocolate, sugar, wax, etc.). Dried products of the mulberry were recommended to individuals who want to eat healthy, as a quick energy source and healty dried snacks.

Keywords: Mulberry, Drying, Mulberry Sugar, Anthocyanin, Essential fatty acids.



Investigation The Effects on Economic Growth of Economic Main Activity Branches In Turkish Republics

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Abstract

Although various macroeconomic criteria used to measure the growth of the countries, GDP is considered the most important criterion showing the economic growth of country. GDP is the monetary value of the production of goods and services in the country, which is considered as a basic principle within one year period. GDP is calculated by various methods covering the sub-sectors of agriculture, industry and services, which are the main sectors. In this study, short-term and long-term effects on GDP of the three sectors were assessed with advanced econometric approach. In the survey using the panel dataset, 6 Turkish Republic were included in the survey. Research period; It covers a 20 year period starting from 1995. As growth parameters, the dollar value of GDP is used. Analysis method; it aims short and long term effects by establishing econometric models. That sectoral evaluation of the impact on economic growth in the Turkish Republic and it is based on an analytical approach in terms of commercial relations with Turkey.

Keywords: Economics Growth, Turkish Republics, Short and Long Term Relations.

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Determination of Bioclimatic Comfort Zones for Province Karabük (Turkey)

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Abstract

Today's world all the technological efforts are used to make human life more comfortable. Scientists attach importance to creating bioclimatic environments with appropriate climatic conditions where people feel healthy and dynamic. The situation of bioclimatic comfort is the conditions that human can adapt itself to environment by spending minimum amount of energy. A large part of human activities depend on climatic events. The most important components of providing bioclimatic comfort are temperature, relative humidity, wind and radiation. In this sense, comfort maps have begun to be created by the relevant occupational groups. The comfort maps use to an urban environment at the scale of neighborhood and aim to assist in predicting and assessing bioclimatic conditions. In this study it was aimed that the most suitable areas for climatic comfort in Karabük Province were determined. Nine different were chosen to define climatic variations. Average temperature, moisture and wind speed values of these different climate stations were transferred into GIS environment by using Arc GIS 9.3 software. From the data transferred into GIS environment, climate maps created and most suitable areas for climatic comfort were determined.

Keywords: Bioclimatic comfort, GIS, Landscape planning, Karabük

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The Evaluation of Active Green Sites For Recreation: Bor Case

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Abstract

Bor is a central district located in the southeast part of the Central Anatolia Region, within the boundaries of Niğde and surrounded by Aladaglar in the east and Hasan and Melendiz mountains in the north. After the population increased in Bor with the passing of the Ankara-Kayseri and Adana-Konya railways in 1932, the need for green spaces increased due to the effect of construction. In the process, providing livable spaces to communities has become an important issue in environments that are shaped by the combination of natural and cultural objects. In this declaration, the amounts of green areas in the Bor district will be determined; the distribution of the active green areas in the neighborhood scale, the size and the per capita rates will be evaluated within the scope of the "Regulation on the Construction of Spatial Plans" dated 14.06.2014 and numbered 29030 Official Newspaper; recreational usage of available green areas will be discussed and alternative green areas will be proposed which provide effective use to the people of the region.

Keywords: Bor, recreation, active green sites

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Determination of Some Fruit Characteristics in Some Quince (*Cydonia oblonga*) Genotypes Selected from Kayseri Region

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Abstract

In this study carried out between 2011-2013 quince populations consist of chance seedlings were investigated in Kayseri province where no study was conducted on quince selection. Twenty-five fruits per tree in October-December commercial harvesting season of quince in Turkey were collected. It is aimed to determine genetic diversity according to some fruit characteristics in 31 quince genotype. There was high level of variation for fruit quality parameters among the quince genotypes. As a result of these criteria, Fruit acidity of quince genotypes were ranged between 2.40-0.61. Hairiness conditions of genotypes were found from feathered to little feathered. Shell color were determined light yellow and greenish yellow. This study may present new alternatives and contributions to Turkey quince production.

Keywords: Kayseri, *Cydonia oblonga*, selection

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Production Projection of Some Berry Fruits Cultivated in Turkey

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Abstract

Berry fruits are among the most important fruit cultivated in Turkey. Due to their wide area of usage, the production of these fruits has been increasing. The present study was conducted to determine the projection of some berry fruits produced in Turkey according to TÜİK database. Projection coefficient has been calculated as 6.8 % for strawberry, 12.07 % for raspberry and mulberry 3.77 %. The positive projection coefficient predicts that production will be increasing in the following decade.

Keywords: Berry fruits, production, projection coefficient

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Determination of the Meat Species in Meat and Meat Products by ELISA

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Abstract

The presence of different types of meat species in meat and meat products that are undeclared in the label information constitutes one of the problems encountered in commercially available products. Adulteration in meat and meat products is important for economic, religious, moral and health reasons and efforts to prevent it is continuing from past to today. In this study, meat products, in their original packages, belonging to 27 different brands with different packaging numbers that were sent to Etlik Veterinary Control Central Research Institute, Food Control Laboratory in 2016 were tested using the ELISA-TEK -The Cooked Meat Species Identification Kit for the compliance with label information. A total of 590 samples consisting of 176 sucuk, 166 sausages, 187 salami, 17 meat balls, 16 canned roasted meat, 5 cutted meat, 13 minced meat, 6 ravioli and 4 doner kebabs were tested for the presence of beef, pigs, horse and poultry meat. The mixture of cattle and poultry meat was determined in 59 (10%) of 590 samples [13(7.4%) sucuk, 18 (10.8%) sausage, 24 (12.8%) salami and 4 (23.5%) meat ball]. In other samples, only beef was found in accordance with the label information. Adulteration in meat and meat products causes deception of the consumer and poses a risk to health problems. For this reason, frequent and regular checks are important.

Keywords: Adulteration, ELISA, meat, meat products, species identification

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Evaluation of Erosion Risk Situation with Geographic Information systems of Karabük City Center (Turkey)

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Abstract

Karabük Province, which is located in the temperate climate zone, increases the risk of erosion due to irregular rainfall and turbulence and the susceptibility of land morphology to erosion. In addition, the amount of areas with high risk of erosion has begun to increase even further due to the increased population with industrialization, the pressure on the land and the use of faulty land. For this reason, an erosion risk map of the central district of Karabük province was established in order to take into consideration the risk of erosion in industrialization, settlement, agricultural land use and transportation planning studies in Karabük. The erosion risk map generated by CORINE (Cordine of Information on the Environment) method was produced with the help of ArcGIS 10.1. In order to produce this map, slope, elevation, hydrology, vegetation density, temperature, precipitation, land use and soil parameters which are effective on erosion have been used. First of all, GIS values were appointed to these parameters depending on their respective impact values, and then impact degrees of the same were found out depending on their respective GIS weight values within erosion risk. In the last instance, each of the parameters effective in erosion was turned into Raster, and overlaying was realized by means of Raster maps. According to the analysis carried out to find out areas under high risk of erosion, 72 % of the study area was determined as having erosion risk at medium, high and too high levels. 28 % of the remaining area is subject to low and too low risk values.

Keywords: Erosion risk map, GIS, Karabük

Valorization of Walnut Shells by Liquid Hot Water Treatment (Autohydrolysis)

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Abstract

Turkey is one of the most important walnut producers and ranked fourth in the world walnut production with 133,000 tonnes. Huge amount of waste (shell) is revealed for processing and they are not usually utilized for high value production. Obtaining valuable products such as functional oligomers and bioethanol from walnut shell can add value to those. Liquid hot water treatment (LHW) is an environmentally friendly process that can be used to solubilize hemicellulose in lignocellulosic biomass and hydrolyze into oligomer and monomers using only water at high temperatures. Furthermore, LHW enables recovery of phenolics, hemicellulose, which can be evaluated as packaging material and xylooligosaccharide as a prebiotic oligosaccharide. The objective of this study is to investigate the applicability of LHW to solubilize hemicellulose of walnut shell and to fractionate and recover solid and liquid fractions which can be good raw materials for valuable products. Walnut shells were characterized and xylan content was determined as 18.52% of dry weight. In order to observe the effect of reaction time and temperature on solubilization of hemicellulose, the biomass was treated at various temperatures (170-210°C) and holding times (15–30 min) in a pressure reactor. The liquor and processed solids were separated after filtration. The liquor was analyzed for phenolics and; monosaccharides and sugar degradation products by HPLC. The oligosaccharide composition of liquor was determined after post-hydrolysis of liquor at 121°C by 4% (w/v) sulphuric acid. The processed solids were also analyzed for carbohydrates and lignin content. The solubilization of lignocellulosic biomass was increased by increasing reaction temperature. To our knowledge, this is the first attend to valorize of wastes of walnut shell by LHW in order to add value to those wastes.

Keywords: Autohydrolysis, cellulose, hemicellulose, liquid hot water, valorization, walnut shell



Evaluation of The Göreme Historical National Park in Terms of Tourism

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Abstract

Göreme National Historical Park is located in city of Nevşehir, Turkey. It has cover approx. 9.614 hectares (ha) which involve one district (Ürgüp), three towns (Nevşehir, Ürgüp and Göreme) and two villages (Çavuşin, Aktepe). These regions have geomorphological, natural and cultural values. Due to very rich historical assets, it was declared to be National Historical Park in 1986 by Council of Ministries. It has also added to the list of Natural and Cultural Heritage under the name of "Göreme National Park and Cappadocia Rocky Areas" in the 357th order on the date of 12.06.1985 by United Nations Educational-Scientific and Cultural Organization (UNESCO), and the area is one of the nine places from Turkey which are all located within the list. Göreme Historical National Park, which has historical resources (underground cities, churches, chapels), geological formations such as fairy chimneys, endemic plant existence, landscape value, rest and entertainment and tourism resource values is a unique place worth seeing. The area is protected in the status of a national park and also contains archaeological and urban sites. The most important feature of the National Park is the fairy chimneys formed by the erosion of superficial waters on the rocks and rock assemblages. Göreme Historical National Park, located in the Cappadocia region, which is in a very important position in terms of cultural and historical heritage of Turkey, has been one of the well known places in worldwide. Both the natural formation and the historical remains attract tourists from all around of the world and provide a great development in the region in terms of tourism. Among the activities that can be done in the field are; nature and culture tourism, balloon tourism, faith tourism, horse tourism, congress tourism and wine production. In this study, the tourism potential and the activities in the area have been examined in detail and current problems have been identified. Some suggestions and opinions for improving tourism potential of that area were given.

Keywords: Göreme, Göreme Historical National Park, Tourism

Effect of drying conditions on rehydration kinetics of microwave dried melissa

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Abstract

Drying is one of the oldest methods of food preservation and it is difficult food processing operation because of undesirable changes in quality of the dried product. During drying, some important changes take place, as structural and physicochemical modifications that affect the final product quality. Rehydration is the process aimed at the restoration of raw material properties when dried materials are conducted with water. Rehydration can be considered as a measure of the injuries to the material caused by drying and treatments preceding dehydration. Rehydration cannot be simply treated as the reverse process to dehydration. It is not indifferent to the drying method and its effect on the material undergoing rehydration cannot be disregarded. The study of the rehydration kinetics of dried plant tissues composed of three simultaneous processes: the imbibition of water into dried material, the swelling and the leaching of soluble can be very useful in order to optimize the process. From an engineering point of view, it is interesting not only to know how fast the absorption of water can be accomplished, but also how it will be affected by processing variables, and how the soaking time under given conditions can be predicted [1-3]. In this present work, the rehydration kinetics for Melissa was studied at temperatures of 30, 45, 55 and 70°C and at different microwave output powers; 180, 360, 540, 720 and 900 W. The experiments showed that, the temperature of the rehydration process influenced the rehydration rate. The mathematical models depending on rehydration process conditions were also developed.

Keywords: Microwave Drying, Melissa Leaves, Rehydration Kinetic

Mathematical Modeling of Apricot Drying

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Abstract

Apricot is highly appreciated temperate fruit with taste, smell, visual and nutritional properties. Apricot fruits are mostly consumed as fresh but because of their perishable nature and short storage opportunity they are generally dried. Drying is apparently one of the oldest methods in food preservation technique, used by human and commonly used for preservation of fruits and vegetables. In this study, tray drying and also microwave pretreated tray drying were applied on apricot. The drying was performed at a constant air velocity of 0,5 m/s and temperature of 60°C. For microwave pretreated hot air drying microwave was applied to apricot at 350 W power intensity and then samples were dried in tray dryer. Moisture content trends for both tray and microwave pretreated tray drying was the same, because of the studying constant temperature, as normal and similar to literature. The fit quality of 6 thin-layer drying models: Newton, Page, Logarithmic, Henderson and Pabis, Two Term and Wang and Sing were applied to the experimental data of apricot drying. Two term model was the best fitting model for tray dried apricot. For microwave pretreated tray dried apricot, best fitting models are Logarithmic and two term.

Keywords: apricot, drying, microwave, mathematical modeling

The Use of Olive Leaf Extract for The Fortification of Turkish Delight (Lokum)

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Abstract

Turkish delight (Lokum), which is one of the traditional Turkish desserts, is a sugar-based jelly-like confection containing a starch gel. Nowadays, Turkish delight is often flavored with rosewater, lemon, or some other extracts. It has a soft, sticky consistency and is often packaged and eaten as small cubes that are dusted with icing sugar to prevent sticking. Olive leaf extract (OLE) can be also added as an alternative ingredient in the formulation of Turkish delight in order to improve the nutritional quality. The phenolic compounds present in olive leaves exhibit antioxidant activity and health benefits such as anti-hypertensive, anti-inflammatory, as well as hypoglycemic and hypocholesterolemic properties. In this respect, the objective of this study was to develop a newly formulated Turkish delight fortified with olive leaf extract based on satisfactory functional and sensorial attributes for consumer acceptance. Total phenolic content of Turkish delight was found as 110 and 160 ppm due to the corresponding addition of 0.75 % and 2 % OLE, respectively. Sensorial evaluation was performed by 21 semi-trained panelists considering color, texture, taste, odor, after-taste, overall acceptance of products. All the sensorial parameters except texture showed no significant difference between samples containing 0.75 % and 2 % OLE. Texture profile analysis (TPA) was conducted in terms of hardness, adhesiveness, springiness, cohesiveness, gumminess, chewiness, and resilience. No significant change was found among treatments for TPA. In conclusion, our findings suggest that a new formulation of Turkish delight with better functionality and preferable sensorial attributes can be produced by the fortification with OLE.

Keywords: Turkish delight (lokum), Olive leaf extract (OLE), Fortification, Antioxidant, Total phenolics, Sensorial evaluation

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The Modeling of the Effect of Different Drying Methods and Pretreatment on the Antimicrobial Activity of Cauliflower

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Abstract

In this study, effect of conventional drying and freeze drying methods of cauliflower and 10 minutes of stewing and for 10 minutes holding in 80°C water before drying on antimicrobial activity and drying characteristics was investigated. It has been determined that the stewing process has a more positive effect on the antimicrobial activity than holding in water at 80°C. Also, the samples which were stewed and dried by the conventional method was found that in a shorter time dried than the ones dried by other pretreatment. It has also been found that the variation of antimicrobial activity in dried samples by conventional drying is suitably effected by the first order kinetic model. It has also been determined in this study that the antimicrobial activity in the samples dried by the freeze drying method is higher than that of those dried by the conventional method.

Keywords: Drying, Antimicrobial, Cauliflower.

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Yield and Yield Parameters of Maize Plants as Influenced by Irrigation x Nitrogen Interactions

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Abstract

The present study was conducted to determine the effects of different irrigation water levels and nitrogen doses on yield and yield parameters of maize. Plants were grown under combinations of 3 irrigation water levels (50, 75 and 100% of field capacity) and 3 different nitrogen doses (100, 200, 300 kg ha⁻¹). Experiments were conducted in split plots experimental design with 3 replications in 2014. Morphologic observations (green herbage yield, plant height, stem diameter, cob, stem and leaf ratios) were performed and harvest was then performed at milk-dough stage of the plants. Irrigation levels and nitrogen doses had highly significant effects on green herbage yield, plant height, stem diameter, cob and leaf ratios ($P < 0.01$) and the effects of water x nitrogen interaction were not significant ($P > 0.05$). Plant height, stem diameter and green herbage yield increased with increasing nitrogen doses. Increased water levels positively affected green herbage yield, plant height and plant diameter. So increasing irrigation water levels and nitrogen doses had positive contributions both to yield and yield parameters.

Keywords: Maize, irrigation water, nitrogen, yield, yield parameters

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Effects of thyme (*Thymus vulgaris* L.) extract on selected hematological parameters of Nile Fish (*Oreochromis niloticus*)

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Abstract

Thyme (*Thymus vulgaris* L.) is one of the earliest known medicinal plant. In this study, hematological parameters of Nile Fish (*Oreochromis niloticus*) was investigated. In this purpose, fish were fed 24 and 72 hours with diet supplemented with 1%, 10% and 30% of thyme extract and with a normal diet as control. In fish, hematological parameters (RBC, WBC, Hct and Hb) were measured thyme extract treatment for 24 and 72 hours. The results show that fed of 10 % thyme extract may enhance some hematological parameters including Hb levels, compared to the controls after 72 hours. These results show that oral administration of thyme extract may be useful to fish healthy.

Keywords: Hematological parameters, *Thymus vulgaris*, *Oreochromis niloticus*, Thyme

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Physicochemical Properties of Soils under Crimean juniper

(*juniperus excelsa* bieb.) Flora

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Abstract

Determining the quality of forest areas that constitute an important part of the natural ecosystem is very important for the continuation of sustainability. Crimean juniper species that have a wide spreading area in our country, especially in the Mediterranean region. In this study, soil samples were taken from 40 points depending on depth (0-5, 5-30, 30-60, 60-120cm) where the species of crimean juniper in the lakes region. Some physical and chemical properties of the mentioned materials were determined and correlation relations were examined. The mean sand, silt, clay content of the surface soil (0-5 cm) was determined as 32.73, 40.45, 26.81%, organic matter content was considerably higher (2.65-13.39%) than the agriculture soil, pH values (7.09-8.45) were found between neutral and strong alkaline reactions. The contents of Na, K, Ca and Mg were determined respectively 8-31.19, 0.58-16.03, 35.71-127.91, 1.28-27.44 me / 100g. The Cation Exchange Capacity (CEC) values of the soil were 21.53-103.46 me / 100g at 5-30 cm depth. As a result of the descriptive statistics in the distribution of exchangeable cations, while Ca contents showed a normal distribution, Na, K, and Mg showed right- skewed distribution. When the variability of soil properties was examined at 30-60 cm depth, Electrical conductivity (EC), Ca, KDK, lime, sand and clay were determined to have high variability. The highest correlations between variables were sand-clay, Ca-pH, As the lowest correlations were between field capacity-clay, sand-EC, Na-lime content at 60-120 cm depth.

Keywords: *Juniperus excelsa* bieb., Forest soil, Soil properties, Mediterranean

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Onion Juice Pasteurization by UV-C Irradiation

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Abstract

Onion (*Allium cepa* L.) juice is a by-product of onion paste production and onion roasting processes. Freshly prepared onion juice is an ingredient of marinade sauce used by the large-scale producers of meat products such as doner kebab. However preparation of fresh onion juice is a time and manpower consuming process requiring a temperature controlled storage space for onions. The continuous supply of onion is also a problem because it is a seasonal vegetable. This study aims to pasteurize the acidified onion juice (pH 4.3) and extend its shelf life by means of ultraviolet (UV-C) irradiation. The juice samples inoculated with *Escherichia coli* K-12 were treated with UV-C irradiation using a benchtop UV apparatus (4*20 W, UVP XX-20S, 254 nm) designed in the Food Engineering Department of Osmaniye Korkut Ata University. The parameters i.e., irradiation time, UV incident intensity, and juice depth that are important factors for UV-C processing were optimized using experimental design and statistical analysis. All the experiments were replicated twice. Under the optimum processing conditions (30 min irradiation, 7.5 mW/cm² UV incident intensity, 0.5 mm juice depth, 6374.5 mJ/cm² UV dose), *E. coli* K-12 in onion juice was reduced by 4.02 ± 0.17 log. It was revealed that UV-C irradiation can be an alternative method for cold pasteurization of acidified onion juice. Additionally, it may offer a solution to the problem caused by usage of onion juice for large-scale meat product production. It was concluded that UV-C irradiation has a potential for minimally processed and value-added food products.

Keywords: Onion juice, pasteurization, UV-C irradiation

Detection and molecular characterization of two '*Candidatus Phytoplasma trifolii*' isolates infecting peppers at the same ecological niche

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Abstract

Pepper (*Capsicum annuum* L.) cultivars exhibiting yellowing, flower sterility, necrosis, stunting, and small leaves of lateral shoots were collected in Spring 2016 from Malatya province (Turkey). Leaf samples of the most common annual weeds and leafhoppers, nearby symptomatic pepper plants, were also sampled. Nested-PCR and virtual computer-simulated restriction fragment length polymorphism (virtual RFLP) methods have been implemented to ascertain and characterize the phytoplasma-associated disease. Using universal primer pairs in nested-PCR, DNA fragments of approximately 1.2 kb were amplified from 3 pepper samples. None of the weed and leafhopper samples were reacted positive in PCR reactions. Next-generation sequencing (NGS) was used to sequence the amplified PCR fragments of two samples. Analysis of 16S rDNA sequence and virtual restriction fragment length polymorphism (RFLP) confirmed the presence of '*Candidatus Phytoplasma trifolii*' infections and the isolates were designated as TR1 and TR2 (Acces. no: KY321932 and KY568694). Both isolates were identified as members of the clover proliferation phytoplasma group and classified in subgroup 16SrVI-A phytoplasmas in pepper as strains of '*Ca. Phytoplasma trifolii*'. A low level of genetic diversity between two '*Ca. Phytoplasma trifolii*' isolates has been established by next generation sequencing. The molecular characteristics of both isolates were also different from reference patterns of all previously established '*Ca. Phytoplasma trifolii*' isolates in the world. Particularly, the TR2 isolate showed a mutation comparing with TR1 isolate and reference strain (AY390261). To the authors' knowledge this is the first report of *Ca. Phytoplasma trifolii* in pepper in Turkey.

Keywords: Pepper, '*Candidatus Phytoplasma trifolii*', molecular characterization, Turkey

Effects of Magnesium Sources and Levels on Some Tissue Magnesium Concentration and Bone Mechanical Properties in Broiler

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Abstract

This experiment was conducted to determine the effect of inorganic and organic sources and levels of magnesium (Mg) supplementation on plasma, tibia, meat and liver Mg concentration and mechanical properties of bones in broilers. A total of one day old 450 broiler chicks were used and assigned to six experiment groups each having five replicate, randomly. There were 15 birds in each replicates. In the experiment magnesium sulphate (MgSO₄) was used as inorganic Mg source and magnesium proteinate was used as organic Mg source. Experimental diets were supplemented provide 0 (control), 0.2 and 0.4 % Mg levels inorganic and organic Mg source of basal ration, experiment period was six weeks. Main effect of Mg source and source x level interaction effect had not significant on plasma, liver, breast and thigh meat Mg concentration (P> 0.05). While treatments did not significant effect on liver, breast and thigh meat Mg concentration, the main effect of Mg levels was significant effect on plasma Mg concentration (P< 0.05). Plasma Mg concentration which were fed with ration added 0.2 and 0.4 % Mg level was higher than the control group. Tibia Ca concentration which were fed with ration added organic*0.2 and 0.4 % Mg levels were higher than the other groups (P< 0.05). Tibia P concentration of organic Mg source fed with the group were higher than the inorganic source (P< 0.05). The highest tibia Mg concentration were found to fed with organic*0.4 % Mg level of group (P<0.05). Tibia shear force and tibia stress which were fed with ration added 0.2 and 0.4 % Mg levels were higher than the control group (P< 0.05).

Keywords: Broiler, magnesium, tissues mineral concentration, bone mechanical properties



Adaptive Neuro-Fuzzy Inference System (ANFIS) Approach for Prediction of the Colour Features of Apple Fruits

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Abstract

Color is not only an important indicator of maturity in fruits and vegetables but also a significant parameter for product classification systems. Colour measurements in agricultural products are performed using a variety of methods. CIELAB which is one of these methods is an approximately uniform colour system. This colour space can be used in determining colour features and calculating of some parameters such as hue, chroma, and lightness. The objective of this study was to predict the colour index, chroma and hue angle value of the apple varieties through adaptive neuro-fuzzy inference system. Root mean square errors (RMSE) for each apple varieties were found to be very low (0.0001). Results demonstrate that ANFIS approach can be used to accurately predict the related parameters of the apple types.

Keywords: Color index, fruit maturity, product classification.



Opportunities and Challenges of UV-C Irradiation for Microbial Safety and Quality of Fruit Juices

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Abstract

Popularity of fruit juices has been arisen due to their health benefits. However, the contaminations with pathogenic microorganisms may cause many illnesses and fatalities. Thermal pasteurization is the best-known method for preservation of fruit juices. Although thermal processing can ensure microbial safety, quality of juices is adversely affected by use of high temperature. Moreover, consumers have increasing interest towards safe products with fresh-like properties. UV technology is one of the emerging nonthermal technologies that can be used as an alternative to thermal pasteurization. Hence, this review will focus on evaluation of the current knowledge, advantages and disadvantages of UV-C irradiation regarding microbial safety and quality of fruit juices. One of the superiorities of this technology is its germicidal effect on various microorganisms including bacteria, viruses, yeast and molds at 254 nm. Mechanism of action is based on absorption of UV photons by genetic material and consequent formation of pyrimidine dimers on the same DNA strand that inhibits microorganisms to reproduce. Microbial inactivation efficiency can be improved for different type of juices by optimizing several UV-C processing parameters such as light intensity, exposure time, flow rate and film thickness. In addition to improve microbial safety of juices, UV-C irradiation can better preserve physicochemical and nutritional properties as well as extend the shelf-life without leaving any chemical residue. It is also a promising technology compared to thermal processing in terms of investment and operational cost. Nevertheless, type, composition and optical properties of fruit juices may limit the penetration of UV-C light. Highly absorptive media or suspended particles reduce the effectiveness of processing. Besides, it is not sufficiently effective on inactivation of quality degrading enzymes. Considering the above information, UV-C irradiation has a potential to produce premium quality juices. For future applications, combination with other preservation methods can be recommended to minimize the limitations of the current system.

Keywords: UV-C irradiation, fruit juice, microbial safety, fruit juice quality



Assessment of Food Preservatives in Terms of Toxicity

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Abstract

Various substances such as food coloring, taste correcting, antimicrobial or antioxidants can be added to food. These substances are generally called "food additive substances". According to the purpose of use, food additives can be classified as preservatives, nutritional additives, colorants, flavor enhancers, texturizers and others. In the European Union, this classification is made in 26 groups and the substances permitted for use are coded with "E number". The substances used to prevent the effects of pathogenic bacteria or other microorganisms causing deterioration are included in "Food Preservatives" group. The use of food preservatives helps to prevent economic losses by extending the shelf life of food. Natural and artificial methods are used to protect food. Boiling, freezing or treating with vinegar, salt, sugar etc. are among the natural methods. Artificial protection methods consist of applications such as sodium benzoate, benzoic acid, sodium sorbate, potassium sorbate, sodium nitrite, nuclear radiation, vacuum packaging and hypobaric packaging. Especially the addition of synthetic materials as food preservatives causes various health problems in humans. It has been reported that nitrate and nitrite, benzoates, sorbates, nuclear radiation cause headaches, urticaria, asthma, contact dermatitis and even cancers. Therefore, nowadays, efforts are being made to spread more natural methods to protect the foods and increase their qualities. This article provides information on the toxic effects of certain substances used as food preservatives and the legal regulations related to them.

Keywords: Food, preservatives, legal regulation, toxicity

Investigation on the Improvement of Germination and Seedling Emergency Performances on Some Oriental Type Tobacco Seeds

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Abstract

The search was carried out to investigate the effects of different germination and seedling emergency methods on oriental type tobacco (*Nicotiana tabacum* L.). In the trial Akhisar-97, Birlik-128 and Izmir-Ozbas type tobaccos which are widely used in production in Aegean Region were used and experimental design was Randomized Complete Parcel Design with four replications. Some germination improving pre-treatment applications were used in order to improve germination and seedling emergency performance to obtain more healthy and homogenous seedling emergency at spesific time intervals and thus to provide quality seedlings. For this purposes, pre-treatment experiments were carried out to determine the appropriate application dose, time and temperature. Eight different application methods were used such as control, osmopriming (KNO₃), osmopriming(PEG-6000), polimer coating, osmopriming(KNO₃)+polimer coating, osmopriming(PEG-6000)+polimer coating, osmopriming(KNO₃)+polimer coating +GA₃, osmopriming(PEG-6000)+polimer coating +GA₃. According to the research results, the highest germination and emergency rate results were found in osmopriming(PEG-6000) and osmopriming(PEG-6000)+polimer coating+GA₃ applications. Osmopriming (PEG-6000) +polimer coating applications were lower than osmopriming (PEG-6000)+polimer coating+GA₃ combinations. As a result, it is understood that GA₃ removes the adverse effects of polimer coating on germination and seedling emergency. The highest germination rate and average germination time (91% and 1,72 date) was obtained in Birlik-128 type tobacco seed with osmopriming(PEG-6000)+polimer coating+GA₃ application method. Germination rate and average germination time results was determined 88 % – 2,1 date in Akhisar-97 and 80 % – 1,95 in Izmir-Ozbas type tobacco, respectively. Our results were shown that emergency rate and average emergency time were varied in terms of the three type tobaccos.

Keywords: oriental tobacco, priming, polimer coating, PEG-6000, KNO₃, GA₃

The Endogenous Hormones in Lettuce Seedlings Under the Combined Effects of Nitric Oxide and Salt Stress

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Abstract

Nitric oxide is regarded as an important signaling molecule that plays an important role in regulating stress responses, plant growth and development. Salinity is one of the most important environmental stresses limiting agricultural production. Phytohormones play critical roles in regulating plant responses to stress. In the present study, the effects of sodium nitroprusside (SNP), a nitric oxide donor, on the contents of endogenous hormones under NaCl stress was investigated. For this purpose, lettuce seedlings were exposed to two different (50 and 150 mM) concentrations of NaCl for 48 h, after the application of 50 and 100 µM SNP. Results demonstrated that salt stress significantly reduced indole-3-acetic acid (IAA) gibberellic acid (GA) and salicylic acid (SA) contents in the lettuce seedlings. However, SNP application greatly mitigated the adverse effects of NaCl on endogenous hormones. The content of IAA, GA and SA in lettuce seedlings with SNP-NaCl treatment was higher than those of NaCl treatment. On the other hand, abscisic acid (ABA) content increased dramatically in lettuce seedlings after 48 h of exposure to salt stress. Meanwhile, foliar application of SNP decreased ABA level in the seedlings. The results suggested that the regulative effect of SNP at the optimum concentration on endogenous hormones improved the ability of plant stress resistance, and its protective effect against salt stress.

Keywords: Abscisic acid, Gibberellic acid, Indole-3-acetic acid, Salicylic acid, Sodium nitroprusside

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Distribution of Nano Particles in the Wood Impregnated with Nano Scale Boron Nitride

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Abstract

Thermal instability is the one of the most important disadvantage of wood. Therefore, many papers have been conducted to improve the thermal instability. Nanotechnology offers an important opportunity to improve the thermal stability that cannot be provided by traditional methods. Nanoparticles distribution inside the wood is an economical and simple method to improve the thermal properties of wood. In this study, wood was impregnated with nano-sized boron nitride (NBN) with a solution of 3% in a vessel which can be controlled the ratio of vacuum and pressure. After impregnation, SEM/EDX analysis was conducted to determine the distribution of nano particles. According to SEM pictures, deposits of NBN were found to be near the cell wall and the pits. But the deposits were only determined until 10 mm deeply (samples had 30 mm dimension) under the surface.

Keywords: NBN, Ash wood, Nano particle, Impregnation, Innovation, SEM analysis.

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The Efficacy of Some Attractant and its Concentration for *Bactrocera oleae* Control

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Abstract

Olive, *Olea europaea* subsp. *cuspidate* (Wall. G. Don) Cif. (Ligustrales: Oleaceae) is a very important crop in Aydın Province, Turkey, and the olive fly, *Bactrocera oleae* (Gmelin) (Diptera: Tephritidae), is the major pest of olives in most commercial olive-growing areas. *Bactrocera oleae* is of tremendous economic importance because of its monophagous nature and its direct damage to olive fruits. In this study, it was aimed to determine the ability of some attractant to control of olive fly in mass trapping. The efficacy of diammonium phosphate, ammonium bicarbonate, ammonium sulphate, ammonium acetate and their 2 %, 5 % and 10 % concentrations and 9 % concentration of Nu-Lure in the traps were tested in three organic olive growing orchards in Aydın Province during 2011. Traps with pheromone capsule were utilized for monitoring olive fly to decide the application time. Experiments were performed in three replicates per olive orchard. Each replicate consisted of nine trees and one tree in the center of the plots was used in the estimations because traps were hanged only this tree. Olive flies in the traps were counted weekly. We have found that the number of Olive flies in the traps with diammonium phosphate was higher than the traps with ammonium bicarbonate, ammonium sulphate and ammonium acetate. The numbers of flies in the traps with diammonium phosphate in the concentration of 2 %, 5 % and 10 % were 118, 89 and 50 fly/trap respectively, in the first experimental orchard; and 113, 88 and 48 fly/trap, respectively, in the second experimental orchard; 67, 48 and 30 fly/trap respectively, in the third experimental orchard in 2011. We can conclude that the effect of 2 % diammonium phosphate on olive fly was higher than that of 5 % and 10 % diammonium phosphate concentrations.

Keywords: *Bactrocera oleae*, Olive fly, diammonium phosphate, control, mass trapping



The Evaluation of Irrigation Management Practices of Irrigation Cooperatives in Polatlı District of Ankara

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Abstract

This study has conducted to evaluate the irrigation management belongs irrigation cooperatives which operate in Polatlı District, Ankara Province. Depending up on this purpose; the soil within the territory of irrigation cooperatives has been examined in terms of agricultural irrigation features. In addition, by using surveys; the irrigation methods and management problems of district's farmers are determined and solutions of these problems are presented. In this study, 8 irrigation cooperatives which represent research area were discussed and surveyed with 60 cooperative members and 9 cooperative board members. According to the survey results; while 98 % of cooperative members using the sprinkler irrigation, only 2 % uses drip irrigation. Among the members, 73 % of graduated from primary school, 22 % of from high school and 5 % of from university. 31 % members have thought the irrigation fees are expensive, 67 % members have recommended that the irrigation fees must be calculated based on number of irrigation sprinkler head. 12 % members have expressed to determine the watering time by controlling the soil, 63 % of by looking the situation of the plant and 25 % of by estimation. 25 % surveyed members have evaluated the cooperative management as poor-very poor. 38 % of members are not satisfied from collection of money and 41 % of stated the training about irrigation is poor-very poor. Also, the managers of the cooperative sorts the problems in the cooperative; the lack of interest of the members (40 %) comes first, to complain about electricity dept payments (32 %) comes second order. As a result, the problems of the irrigation cooperatives in the research area have been investigated and submitted solutions and recommendations.

Keywords: Energy, General Assembly, Irrigation, Irrigation Cooperative, Main contract

Acknowledgement: This study was made from the master thesis of Belgin Büyükbaş

First Report of Resistance to Metalaxyl in Downy Mildew of Sunflower Caused by *Plasmopara halstedii* in Turkey

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Abstract

Including 45 % of oil in its seed, sunflower is the most important oil crop plant of Turkey as well as being the the main raw material of the oil industry. Downy mildew of sunflower caused by *Plasmopara halstedii* [(Farl.) Berl. & de Toni], is the most important disease of sunflower throughout the world. The fenylamide fungicide metalaxyl have been shown to be fairly effective for the control of *P. halstedii*, but only for a certain period of time. The systemic fungicide metalaxyl usually applied as seed coating against sunflower downy mildew. However, metalaxyl-resistant isolates of the pathogen were first observed in France. Surveys were performed in Tekirdağ, Edirne, Kırklareli, Ankara, Bursa, Samsun, Tokat and Adana provinces where sunflower is widely grown in 2010. During the surveys, sixty-five *P. halstedii* isolates were obtained and purified with single spore infection method. Leaf disc inoculation method have been used as a fast and precise test for the screening of metalaxyl resistance in sunflower downy mildew. Infection was checked daily. Sunflower leaf discs showing spontaneous sporulation at the surface were counted as being successfully infected and rates of infection were determined in comparison with controls without metalaxyl. Metalaxyl resistance of *P. halstedii* isolates was gradually determined according to the sporulation of the pathogen on sunflower leaf discs in the presence. With leaf disc method, resistance to Metalaxyl was detected in 5 isolates of the 65 *P. halstedii* isolates. Also microsatellite primers (GACA4 ve T3B) were used to determine the resistance/sensitive to Metalaxyl. The results of both methods verified each other. To the authors' knowledge this is the first report of *metalaxyl resistance* in *P. halstedii* in Turkey.

Keywords: *Plasmopara halstedii*, metalaxyl, Sunflower, Microsatellites, Turkey



Investigation of Urban Identity and Urban Square Relationship in the Case of Isparta Government Square

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Abstract

From the early ages to the present days, the historical and cultural values of cities create the identity of cities. However, these values are decaying due to unplanned development of cities. Squares that are shown as the most important public places of cities; are places that are used intensely by the city dwellers. Squares are places where different physical, social, cultural and economic activities are performed and generally, located in city center or close to center and reflect the identity of the cities with their historical character. Within the scope of this research, as a result of unplanned urbanization, the effects of the squares which constitute focus point as the most active used place of cities on the urban identity has been researched. For this purpose, the literature about urban identity and city squares has been examined. City-identity relationship were revealed in the case of Hükümet Square which is located in Isparta, has a central location from the past to recent times historically, administratively, socially and physically for the city.

Keywords: City square, City identity

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Control of the Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) with various attractants in persimmon orchards in Hatay province

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Abstract

The Mediterranean fruit fly (Medfly), *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae), is a serious pest in persimmon in Hatay province of Turkey. The study was carried out to compare different attractants for control of Medfly at persimmon orchards in Hatay province. The study was conducted in persimmon orchards with different attractants; ammonium carbonate (AC), ammonium acetate (AA), putrescine (P), trimethylamine (TMA), ammonium bicarbonate (AB), diammonium phosphate (DAP). Transparent 500 ml polyethylene bottles with four holes were used as traps. Each of the traps consisted of 300 ml of one of the attractants, 2 ml of propylene glycol (10%) and 2 ml of DDVP (2%). Traps were hanged 1-1.30 m above ground on the tree branches. The study was conducted as randomized complete blocks design with twelve treatments and five replicates. A total of 15592 Medfly adults were caught by attractant traps on persimmon during the sampling period. The highest catch of Medfly adults were by AB attractants traps, followed by AB+DAP, while the lowest catch of Medfly adults were by AA+TMA+P attractant traps. As a result, an attractants of AB and AB+DAP is recommended with alternative control for the Medfly on persimmon orchards in Hatay province.

Keywords: Medfly, *Ceratitis capitata*, persimmon, attractants traps, Hatay

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Kanatlı Yumurtalarında Kabuk Kalınlığı Ölçüm Metotlarının Karşılaştırılması

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Özet

Yumurtalarda kabuk kalınlığı, bir dış kalite özelliği olarak değerlendirilmektedir. Yemelik yumurtalarda yapılan çalışmalarda yumurta kabuk kalınlığı yumurta kırıldıktan sonra rahatlıkla ölçülebilmektedir. Ancak, damızlık sürülerde veya kuluçkalık yumurtalarda yapılan çalışmalarda yumurta kabuk kalınlığının yumurta kırılmadan belirlenmesi gerekmektedir. Bu nedenle araştırmacılar kabuk kalınlığı farklı parametrelerden tahmin edebilecekleri yöntemler geliştirmişlerdir. Son yıllarda ultrason yöntemi ile de ölçüm yapabilen cihazlar üretilmiştir. Bu çalışmada farklı ölçüm metotları gerçek kabuk kalınlığı değerleri ile karşılaştırılarak hangi yöntemin gerçek değere en yakın sonucu verdiği belirlenmeye çalışılmıştır. İlk yöntemde kabuk kalınlığı ağırlığı esas alan bir matematiksel formül ile belirlenmiştir. İkinci yöntem kabuk kalınlığının yumurta özgül ağırlığına göre belirlenmesidir. Daha sonra ultrasonik cihazla ölçülen kabuk kalınlığı, yumurtalar kırıldıktan sonra hem dijital hem de normal mikrometre yardımı ile gerçek kabuk kalınlıkları zarlı ve zarsız olarak belirlenmiştir. Bu çalışmadan elde edilen sonuçlara göre, yoğunluk yöntemi rakamsal değer vermediğinden ve gerçek ölçüme göre oluşturulan gruplara benzer sonuçlar vermediğinden; matematiksel formül ile kabuk kalınlığı belirleme yöntemi de gerçek ölçüm sonuçlarına benzerlik göstermediğinden özellikle kuluçka çalışmalarında kullanılması yanıltıcı sonuçlar doğurabilir. Bu nedenle, kabuk kalınlığının doğrudan belirlenemediği durumlarda, ultrason yardımı ile ölçüm yapan cihazın okuduğu değerler, gerçek ölçüm değerlerine en yakın sonucu vermektedir.

Anahtar kelimeler: Yumurta, kabuk kalınlığı, ölçüm yöntemleri, ultrason, karşılaştırma

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Production of Reduced Fat Labneh Cheese with Locust Bean Gum

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Abstract

In recent years, since excess adiposity is thought to be responsible for the development of chronic diseases, people have been seeking a healthier life style, and therefore they prefer reduced intake of dietary fats having low- or reduced-fat and fat free foods, which has led to the development of nutraceutical foods. Many ingredients have been developed for the specific purpose of fat replacement in functional dairy foods. Locust Bean Gum (LBG) is widely used in food systems to modify quality attributes and shelf-life as thickening and gelling agents. Objective of this study was to develop low-fat, reduced fat Labneh cheese using LBG as a fat replacer. The results revealed that the addition of LBG increased the textural and sensory attributes of low-fat Labneh cheeses. In the present study, the textural properties such as firmness, work of shear, stickiness, and work of adhesion of all cheese samples were significantly higher in the low fat cheese (6%, LG) with LBG.

Keywords: Labneh Cheese, Locust Bean Gum, Fat Replacer



Parametric Design As a Tool in Landscape Architecture

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Abstract

The progress of computer technology in digital design have began to initiate new and effective tools for designers. By using new techniques and technologies, designers are now able to design more efficiently. These technologies developed from aided design to parametric design in recent years. The use of parametric design opened the ground for achieving at different scales of information, giving new alternatives in spatial and formal features. Parametric design is a method/process based on algorithmic thinking, implies the representation of a design with a series of associative operations, controlled by constraints and parameters. The term “parametric design” used in various terms such as “variational design”, “algorithm design” or “relational modeling”. Parametric design is different from standard digital tools for landscape design since it can be possible to evaluate different effects of natural factors on a landscape design process simply by entering some data and building a landform model. In this paper, the authors analyze the application and the role of parametric design in landscape architecture. In this context, it is tried to present parametric design concept, its development components, limitations, contributions and the effects of parametric design on landscape architecture.

Keywords: parametric design, Landscape Architecture

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Relationships Between Erodibility Criteria and Some Physical and Chemical Properties of Soils Formed on Different Topographic Positions

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Abstract

This research was carried out to determine the relationships between erodibility criteria and some physical and chemical properties of soils formed on different topographic positions in Engiz District of 19 Mayıs County, Samsun. In this study, 28 surface soil (0-20 cm) were taken from the lands used as forest, pasture and agricultural field located on the same line and different topographic positions . The values of clay, silt+clay, organic matter, cation exchange capacity, exchangeable Ca+Mg, lime, EC, consistency limits, field capacity and wilting point had significant correlations with soil erodibility. It was determined that topographic position and land management influenced basic soil properties and erodibility. Soils located on flat positions, forest and pasture were more stable for erodibility than soils located on slope position and soils used in agricultural practices.

Keywords: Soil properties, Topographic position, Erodibility



A Survey on Accessible Tourism Evaluation of Disabled People

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Abstract

Accessible tourism, which aims to provide services to people who have to maintain their lives with temporary or permanent disability; foreshadows social inclusion, rather than exclusion from society. Accessible tourism; it can be defined as an effort to provide sustainable services and meet expectations whatever the products and services offered, irrespective of whether they have limited physical mobility mainly people with disabilities. Understanding of the needs and expectations of disabled people, who is a potential market in the tourism sector, establishment of transportation, facilities and service provision facilities, can increase the participation of disabled people in tourism activities. In this study, it was aimed to make a general evaluation about the tourism services in Göreme Open Air Museum by people with disabilities. In this context, information has been obtained on reaching views on the expectations of the disability by means of relevant public and non-governmental organizations managers. In this study, conditions that prevent persons with disabilities from participating in tourism activities were determined and solution proposals were presented.

Keywords: Tourism, Disabled, Accessible Tourism, Göreme Open Air Museum

Investigation of Chemical and Sensory Properties in Milk by Milk Yield of Dairy Cows Fed with Pumpkin Residual Silage

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Abstract

The present study was conducted to investigate the effects of pumpkin residual silage replacement with some forage part of the ration on and chemical and organoleptic characteristics of the milk, SCC, milk yields of Holstein dairy cows. A total of 48 Holstein dairy cows at 2nd lactation and 3rd phase (at 180 ± 23 day) of lactation (with 553 ± 52.8 kg) were used. Dairy cows were randomly separated into two treatment groups. The first group was control (T1=consuming fresh sugar beet pulp) and the second group was treatment (T2=consuming pumpkin residual silage) group. Milk yield (70 days) was not statistically significant ($P < 0.05$), which was identification as 1217.36 ± 62.8 l and 12272.13 ± 51.3 l respectively in T1 and T2 groups. The effect of treatment and control week on fat, protein and pH properties has been significant ($P < 0.05$). These values were determined as 2.77 ± 0.73 %, 3.09 ± 0.81 % (at check-in week 1) and 2.84 ± 1.74 , 3.37 ± 2.05 % (at check-in week 5 for fat, respectively, 3.50 ± 0.02 % and 3.40 ± 0.02 % (at check-in week 1) for protein, 6.50 ± 0.05 % and 6.71 ± 0.02 % (at check-in week 5) for pH in T1 and T2 groups. The difference was not statistically significant between the groups in density, freezing point, lactose, conductivity, \log_{10} SHS and milk flow rate. The difference between the groups in terms of taste in baked milk was found to be significant at the first test day ($P < 0.05$), but no statistically significant differences were found in other characteristics. Research findings have shown that replacing some of the wet roughage in dairy cattle ration with silage of pumpkin residual does not negatively affect milk yield, SCC, chemical composition and organoleptic properties.

Keywords: Holstein, pumpkin residual silage, milk yield, chemical composition, organoleptic characteristics

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The Determination of Cotton Contamination in The Aegean Region

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Abstract

Contamination in cotton is an important issue for many cotton producing countries. It is a major problem for countries like Pakistan, Central Asia and many African countries along with Turkey. The aim of this study is to determine the sources of contamination in cotton, harvested by machines in the Aegean region. The study was conducted in the largest cotton-growing areas in the Aegean region (Söke, Menemen, Koçarlı). In this study about 19.047 bales were examined and 44 different contamination sources were identified and classified. Eight of them were organics. These are grease smeared cotton, branches of the plant, leaf trash, broken seed, and deformed cotton by ginning and thirty-six were inorganic. On average 0.463 g contaminant per bale was found from the outside conditions. The contamination rate of cotton produced in the Aegean region is not very high but can be taken under control by efficient training for the producers and careful production.

Keywords: Cotton, Contamination, ginning.

Effects on Water Stress on Daily Stomatal Conductivity of *Stevia rebaudiana* Bertoni

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Abstract

Stevia rebaudiana Bertoni, an herbaceous perennial plant belong to Asteraceae family, is one of the important source of natural sweetening agents with non-calorie that can be used as an alternative to artificial sweeteners. Plant originating in Paraguay and the south-west of Brazil, has a usage possibilities in many sector and can accumulate glycosides which tastes about 300 times sweeter than sugar cane. The previous studies have shown that stevia plant is affected by water stress. In case of water stress, the plants close their stomata and reduced the rate of transpiration. In this study, it was aimed to determine changes in daily stomatal conductance before and after irrigation (T) for consecutive 15 days. In this scope, stevia plant were grown under 6 different irrigation regimes (I) including a control (I100), plants irrigated with 100% restitution of water consumption and additionally 120% (I120), 80% (I80), 60% (I60), 40% (I40) and 20% (I20) of the control treatment and 2 nitrogen (N) levels including zero N (control, N0) and recommended nitrogen level of 10 kg N/da (N10). Irrigation schedule was based on A-Class evaporation pan and soil moisture level. As a result of study, it was determined that stomatal conductivities were decreased with increasing water stress at each N levels.

Keywords: *Stevia rebaudiana*, water stress, stomatal conductivity, nitrogen level



The Determination of Cotton Quality Characters in The Aegean Region

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Abstract

The fiber quality of cotton depends on interactions of the genetic and environmental factors. While the effect of genotype on quality characters such as fiber length, strength, and fineness, is higher, the effect of environmental factors on quality characters such as brightness, yellowness, nep content and trash area is higher. The cotton production areas are the Aegean, the Mediterranean and the Southeast Anatolia regions in Turkey. The climatic differences between these regions and basins affect the cotton quality characters differently. The cultivation practices such as harvesting aids also affect fiber quality. The study was conducted in 2015 to determine quality characters in the Aegean region. The study covers five basins which are Bergama, Gediz, Küçük Menderes, Büyük Menderes and Söke. The Samples were collected from the ginning factory from all of the basins. They were then measured with HVI (high volume instruments). The study suggest that the fiber strength (g/tex), fiber length (mm), micronaire, color grade (Cgr), reflectance (Rd) and yellowness (+b) were significantly different.

Keywords: Cotton, Fiber Quality criteria, AegeanRegion.



Pokeweed (*Phytolacca americana*) antiviral protein inhibits *Zucchini yellow mosaic virus* infection in a dose dependent manner in squash plants*

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Abstract

Pokeweed antiviral protein (PAP) of *Phytolacca americana* L. (Pokeweed) is a single-chain ribosome-inactivating protein (RIP) characterized by its ability to depurinate plant ribosomes. Here, we isolated, cloned and expressed the ribosome inactivating protein (RIP) gene, designated as pokeweed antiviral protein type 1 (PAP-I) from the summer leaves of pokeweed collected from Black Sea region (Turkey). Our findings presented here provide direct evidence that exogenous application of PAP I cause concentration-dependent inhibition of *Zucchini yellow mosaic virus* (ZYMV) infection on squash plants. Squash plants were exposed to PAP I protein with and without DMSO for four consecutive days. Regular spraying of approx 30 kDa recombinant PAPI at 2 µg mL⁻¹ concentration prevented treated plants from mechanical virus infection. PAP I showed antiviral activity in 9 plants out of 15 inoculated plants. Remarkably, simultaneous application of PAP, DMSO, and ZYMV did not prevent virus infection suggesting that PAP did not have any effect on viral RNA. In the absence of ZYMV the purified peptide was not cytotoxic for squash plants although a reduction of plant size, possibly caused by host ribosome depurination was observed.

Keywords: *Phytolacca americana*, antiviral protein, expression, inhibition, *zucchini yellow mosaic virus*

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An Overview of Nano-Scale Food Emulsions: A Mini Review

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Abstract

Emulsions with droplet size in the nanometric scale (typically in the range of 20-200 nm, or milky up to 500 nm) are often referred in the literature as miniemulsions, nano-emulsions, ultrafine emulsions, submicron emulsions, emulsoids, unstable microemulsions etc. Due to their characteristic size, nano-scale emulsions appear transparent or translucent to the naked eye. They possess the ability of incorporation into optically transparent products, which gives the great potential of increasing bioavailability of lipophilic functional substances, that is, nano-sized emulsions can be used in encapsulating of bioactive components, being as a carrier for bioactive components, and preventing their degradation. Recently, nano-scale emulsions are also attracting increasing attention due to their characteristic feature of kinetic stability. A kinetic stability that lasts for months, stability against dilution or even against temperature changes, totally unlike the (thermodynamically stable) microemulsions. These properties make nano-scale emulsions of great interest for fundamental studies of food, medical and pharmaceutical industries. The aim of this study is to present a mini-review on properties of nano-scale emulsions, and an overview of nano-scale food emulsion.

Keywords: Nano-Scale Emulsion, Food, Applications, Bioactive Components, Encapsulation

Antiviral and Antimicrobial Activity of Biologically Active Recombinant Bouganin Protein from *Bougainvillea spectabilis* Willd **

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Abstract

Bouganin antiviral protein (BAP) gene isolated from *Bougainvillea spectabilis* Willd. 8 was cloned, expressed and the antiviral and antimicrobial activities were investigated. 9 The full-length bouganin antiviral protein gene was amplified by reverse transcription- 10 PCR using mRNA as template extracted from mature leaves. The coding region of 11 bouganin gene was cloned into prokaryotic expression vector pETDuet-1 after 12 amplification with end to end gene specific primers. The recombinant plasmid was 13 transformed into *Escherichia coli* cells BL21(DE3)pLysS and the expression of BAP 14 gene was induced by isopropyl β -D thiogalactopyranoside (IPTG). Bouganin antiviral 15 protein having a molecular mass of 28 kDa has been isolated from transformed bacterial 16 colonies. Antiviral activity of bouganin was assayed against Zucchini yellow mosaic 17 virus (ZYMV) by a mechanical inoculation test. The antifungal activity of purified 18 recombinant protein was tested against three types of pathogenic and non-pathogenic 19 fungi using disc diffusion method. The increased amount of antiviral protein reduced 20 the disease severity caused by ZYMV. The bouganin antiviral protein was inhibited the 21 growth of *R. solani* by 30.7% and of *T. harzianum* by 20% after 72 h compared to 22 control. No growth inhibition was observed for *F. oxysporum*. In vitro expressed BAP 23 protein showed that the all plants including controls treated with antiviral proteins 24 exhibited severe growth reduction compared with negative control (not treated) plants.

Keywords: *Bougainvillea spectabilis*, Antiviral protein, BAP gene, Expression, Antiviral and Antimicrobial activities.

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Ethyl Lauroyl Arginate Utilization in Meat Industry as An Antimicrobial Additive

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Ethyl lauroyl arginate became an antimicrobial additive in meat products except emulsified and smoked sausage since 24/11/2014 according to the Turkish Food Legislation. It is synthesized by esterifying arginine with ethanol, followed by reacting the ester with lauroyl chloride. The resultant ethyl lauroyl arginate is recovered as hydrochloride salt and is a white, solid product which is filtered off and dried. The active ingredient is the hydrochloride salt of ethyl-N α -lauroyl-L-arginate (ethyl-N α -dodecanoyl-L-arginate·HCl, CAS number 60372-77-2) and its molecular weight is 421.02. It is stable for more than 2 years at room temperature when protected in a closed container. This substance is intended to be used as preservative for its antimicrobial activity. Ethyl lauroyl arginate is a cationic surfactant. The antimicrobial properties of ethyl lauroyl arginate involve the reduction of surface tension and the formation of ionic aggregates, which cause changes in the conductivity and solubility of cell membranes. Disruption of cell membrane proteins leads to permanent changes in the cell permeability of the microorganism, as well as the growth or inhibition of inactivation, as ions and other cellular components may cause leakage. Ethyl lauroyl arginate is found in broad spectrum activity against Gram-negative and Gram-positive bactericides, yeasts and molds. Ethyl lauroyl arginate can show activity over a wide pH range, such as 3 to 7 pH. The objective of this review is to describe the effects and utilization ways of ethyl lauroyl arginate in meat products.

Keywords: Ethyl lauroyl arginate, antimicrobial additive, meat products



Analysis of Neutral Lipids–Comparison of Normal Phase HPLC/ELSD with Silica and Diol Column Separation

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Abstract

Herein, a normal-phase high-performance liquid chromatography–evaporative light-scattering detector method (NP-HPLC/ELSD) employing silica and diol columns as the stationary phase was developed for analysis of neutral lipids (NLs). Inertsil Sil 100Å column (250×4.6mm i.d., 5µm) and LiChrospher 100Å Diol HPLC columns (250×4.0 mm id., 5µm) were used for the quantitative comparison analysis of NLs. Addition of triethylamine to a gradient based on neutral-A (hexane:acetic acid, 99:1.0, v/v) and neutral-B (hexane:isopropanol:acetic acid, 84:15:1.0, v/v/v) mobile phase systems promoted a good and rapid separation of neutral lipid classes for both columns. Also, the use of an evaporative light scattering detector permitted an accurate analysis of a mixture of NLs. All of the NLs of interest in refined vegetable oil samples were well separated on diol column with a total run time of 15.5 min and without necessitating the removal of polar lipids (PLs) beforehand. The method was also validated with a standard mixture of NLs. Calibration curves were linear within different range for each lipid class. Thus, the performance of the diol stationary phase was much better at a high flow rates than that of silica column. The proposed NP-HPLC/ELSD method not only separates 10 different neutral lipid classes with a good reproducibility, but it is also able to estimate the relative proportion in which they are found in a broad range of concentrations.

Keywords: Neutral Lipids, Normal Phase HPLC, ELSD, Silica, Diol

Effect of Temperature on Same Biological Parameters of Walnut Green Aphid, [*Panaphis juglandis* (Goeze) (Hemiptera: Callaphididae)]

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Abstract

Temperature is an abiotic key factor which was affected the development and reproduction of aphids. In this study, reproduction, development and survival rate of walnut green aphid *Panaphis juglandis* (Goeze) (Hemiptera: Callaphididae) were studied at 18,23,28,30 °C, 60 ± 10% RH and 16:8 (L: D) daylight period conditions and life tables were constructed at each temperatures. Life table parameters were estimated according to two-sex method. Variances and standart errors of population parameters were obtained according to Tukey- Kramer (Dunnett,1980) methods by using TWOSEX-MSChart software. It was determined that all parameters were significantly affected by linearly increasing temperature. According to results, highest reproductive rate (R_0), intrinsic rate of increase (r) and finite rate of increase (λ) values were found at 23 °C experiment group and lowest values (17.71 nimphs , 0,2106 day⁻¹, and 1.2332 day⁻¹, respectively) were found at 18 °C experiment group. In addition to, it was found that lowest mean generation time was 9.38 days at 30 °C and highest reproductive value was 19.42 nimph/female at 23°C. The developmental time of pest decreased with increasing temperature and shortest development time was observed at 30 °C test group. According to these results, it can help to estimating infection time, theoretically generation time and numbers and simulation of population dynamic of pest for a certain area.

Keywords: *Juglans regia*, *Panaphis juglandis*, Life table, Temperature

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A preliminary study on the grain yield and some agronomical performances of Quinoa (*Chenopodium quinoa* Willd.) grown under different stress conditions

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Abstract

Quinoa member of *Chenopodiaceae* family is a pseudo-cereal crop that has been cultivated for thousands of years in the Andean region in South America but it is a new introduction in Turkey. The quinoa as a field crop has a great potential in the improvement of food for humans (gluten-free high and quality protein) and animals even under the conditions of marginal lands. Since intensive works on quinoa crop introductions, adaptations and cultivation techniques for specific regions are also necessary; two individual pot experiments were conducted under controlled conditions. Five irrigation treatments (100% control, 80%, 60%, 40%, 20% of the field capacity (FC)) and six different salt levels (0 control-75-150-225-300-375 mM NaCl) were tested on the quinoa crop in 2014 and 2015. Traits tested in the experiments were plant height, harvest index, grain yield and crude protein content of grain. In the first experiment results indicated that deficit irrigation significantly reduced the grain yield and other growth parameters of quinoa compared to the control, but the highest plant height, harvest index and grain yield were determined in the 80% of FC treatment. There was no any significant difference between 100% and 60% of FC in terms of grain yield, however, the highest dry root weight was found in the 60% of FC treatment. In the second experiment results showed that increasing salt levels negatively affected above mentioned traits compared to control, but thousand grain weights was not affected by salt. In generally, quinoa has good adaptation to drought and salt conditions with high phenological flexibility; however, these strategies result in lower maximum grain yield. Water and salt stress negatively affected the crude protein contents of the quinoa grain.

Keywords: Quinoa, deficit water, salt concentration, grain yield and protein content.

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Preliminary Study on Hearing of Kangal Shepherd Dog

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Abstract

Kangal dogs are preferred in many provinces of World as both herding and guardian dog breed. In this preferences the extraordinary sensory qualities of Kangal breed along with their dutiful attitudes towards their commands are playing an important role. Among these senses, auditory senses are of prime importance. Auditory senses are composed of perceiving mechanic vibrations called as sound by outer auditory tract and transmitting these vibrations into inner auditory tract to form sound input in brain. Aim of this study was to determine sound frequencies perceived by Kangal dogs. Subjects of this study composed of 23 clinically healthy Kangal dogs of both genders of which sampled from 4 different breeders in Sivas province that aged between younger than 1 year and 10 years. Brainstem Auditory Evoked Response (BAER) method was used for auditory analyses and Mann-Whitney U test was used to investigate differences between groups. Probes were situated consecutively into right and left ears of dogs and then click tones were transmitted into probes and then click stimulants were visualized as wavelengths in computer screen to determine auditory frequencies (20-40-60-80 dB HL). At the end of the study perceived values as minimum, maximum and mean from right ear were measured as 4.10-6.93-5.26, 3.75-5.65-4.50, 3.23-4.68-3.90, 2.58-4.13-3.62 ms; and from left ear as 3.43-7.05-5.00, 3.05-5.80-4.47, 3.00-5.55-4.05, 2.85-4.68-3.78 ms. When 20, 40, 60 and 80 dB HL auditory frequencies were evaluated according to ages of subjects, measurement values from right ear were found as 4.83-4.29-3.80-3.49, 4.53-4.15-3.70-3.60 ms (under 3 years, n=8) and from left ear as 5.43-4.60-3.95-3.68, 5.25-4.65-4.25-3.86 ms (at 3 and more years, n=15). For the same frequencies gender based measurements were found from right ear as 5.00-4.31-3.84-3.50, 4.72-4.33-3.90-3.82 ms (Female, n=12) and from left ear as 5.54-4.70-3.97-3.75, 5.31-4.62-4.22-3.73 ms (Male, n=11). In conclusion, it was found that auditory senses improved with age in both genders and males have higher increase than females. Also, it was found that there is statistically significant difference between genders in right ear 40 dB HL and in left ear 20 and 60 dB HL according to ages (P<0.05). This research was supported by the Scientific Research Project Fund of Cumhuriyet University under the project number V-043.

Keywords: Kangal (Anatolian shepherd dog), Deafness, Sivas, BAER

The Effect of Orange Fiber Addition on the Some Quality Characteristics and ACE-inhibitory and Antioxidant Activities of Probiotic Yogurt

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Abstract

In this study, the effect of probiotic bacteria (ABT culture (*Lactobacillus acidophilus* LA-5, *Bifidobacterium* sp., and *Streptococcus thermophilus*)) and storage time on the physicochemical and microbiological properties of set type yogurt, with the inclusion of dietary fiber from orange was investigated. Also, antioxidant and ACE-inhibitory activities of the yogurts were studied. Four different levels (0.5%, 1%, 1.5% and 2%) of orange fiber were applied to the yogurts and analyses were performed up to 21 days of refrigerated storage. The study results showed that the addition of orange fiber at a level of 2% was not suitable for yogurt parameters evaluated. The increment of fiber concentration caused an increase of viscosity values, but the lowest value was determined in yogurt with 2% fiber. The highest pH values and the lowest acidity values were obtained in control sample. For the colour parameters of yogurts, fiber addition decreased L* values and increased b* values, but it did not cause change in a* values. Viable microorganism counts decreased during cold storage. The highest *L. acidophilus* LA-5 counts were determined in yogurt with 1% fiber and the highest counts of *Bifidobacterium* sp. were in yogurt with 2% fiber. Furthermore, orange fiber caused a decrease in the counts of *S. thermophilus*. ACE-inhibitory activities of yogurt samples increased with the progressing storage, but antioxidant activities did not change. However, orange fiber concentration increased the antioxidant values of the yogurts. The highest ACE-inhibitory activity value (58.16%) was determined in yogurt with 1% orange fiber. Consequently, this study demonstrated that orange fiber addition was suitable for the probiotic yogurt characteristics up to 1.5% concentration.

Keywords: Probiotic yoghurt, orange fiber, ACE-inhibitory activity, antioxidant activity

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The Evaluation of Kayseri, Ağırnas Traditional Houses in the Frame of Ecological Design

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Abstract

As the result of intensive urbanization and construction activities, cultural historical environments are facing with the threats such as abandonment and deterioration. In this context, traditional housing areas are the mostly effected areas in the urban fabric. One of the most important responsibility of the communities is the preservation of natural & cultural values of traditional settlements as well as their memorial & symbolic values. So, planning and design processes must be based on ecological basis, and nature friendly approaches should be adopted to ensure the sustainable urban development as far as spatial and sociocultural factors are concerned. Traditional/vernacular architecture of the region was shaped due to environmental factors and ecological data throughout history which carries all the requirements of energy efficient ecological design. The most important reasons why settlements belonging to historical religions reached today is the formation of the buildings by using local material by using environmental sources efficiently. Ağırnas which is a sub settlement of Kayseri that is located on the east of the city centre is dating back to 3000 B.C. Ağırnas which was declared as an urban site that has to be conserved has been a settlement of various civilizations and cultures through history which is characterized by its traditional stone masonry houses. Societies that have lived in Ağırnas through history have built their monumental buildings and houses using natural stone and timber with appropriate techniques and structural systems. In this declaration, Ağırnas will be introduced with its natural and cultural qualities, landscaping features and urban characteristics. Then, housing areas & houses of Ağırnas are going to be evaluated in the frame of ecological design criteria. Besides, proposals for the sustainability of the ecological, spatial and socio cultural values of the local character & the settlement is offered.

Keywords: Ağırnas, traditional settlements, traditional Anatolian houses, ecological design, landscape design

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Soil reaction rates in different slope areas in watershed rehabilitation Cameli district area in Turkey

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Abstract

Basin-based agriculture practices are getting more and more important day by day. For this purpose, modeling according to the change in the soil reaction in those regions is one of the primary factors for the agricultural pattern to be applied. Determining the chemical properties of soil profiles in the basin provides facilities for agricultural activities to be carried out in such areas as fertilizer, water use, fertilizer application. In this study, it was aimed to determine the change rates of soil reaction in different slope areas comparatively. For this purpose, the variation of pH at slope ratios of 20 different locations in Çameli was investigated at different soil depths. One-way analysis of variance (ANOVA), Welch test for soil reaction were applied for the comparison of soil. The slope ratios of the lands taken from the 20 different regions reflecting the general soil characteristics of the micro watershed vary between 5% and 50% , and soil reaction value changed from 7.36 - 8.26.

Keywords: Soil reaction, depth of soil, watershed

Organic Acid Concentrations in Acid and Fermented Fish Silage Made from *Equulites klunzingeri*

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Abstract

Organic acids are important as food preservatives and have also been used for as antimicrobial agents for food and feed production and processing. Under anaerobic conditions, many anaerobic and facultative anaerobic microorganisms can produce various organic acids during fermentation. Acetic and propionic acids are the most powerful inhibitors and are used for the prevention of growth of bacteria, yeast and mold. In this study, the fermented fish silages were produced with *Lactobacillus plantarum*(PL), *Pediococcus acidilactici*(AC), *Enterococcus gallinarum*(GL), *Lactobacillus brevis*(BR) and *Streptococcus* spp.(ST) and the acid silages were prepared with formic acid (FA). The objective of this study was to investigate the organic acid contents of acid and fermented, wet and spray-dried fish silages made from Klunzinger's pony fish (*Equulites klunzingeri*). This project was supported by Scientific and Technological Research Council of Turkey (TOVAG-213O166). In fermented groups of wet silages other than AC and GL groups of propionic acid, lactic and propionic acids were formed primarily. Among the fermented silages, the highest lactic acid production was observed in GL and AC groups (1909.39 and 1913.39 mg/100g, respectively). Although, the AC and GL groups did not contain propionic acid, ST, PL and BR groups showed amounts over 1000mg/100g. After spray drying of all silage groups, lactic acid production of fermented silages were over 3400mg/100gr. In addition to that, other than the ST group, propionic acid accumulations of the fermented groups were more than 1200 mg/100g. Among the spray-dried silage groups, the highest acetic acid accumulation was observed in FA group (2030.62mg/100g). The values of the succinic acid showed fluctuations. The lowest concentration was 38.80mg/100g from BR group and the highest was 750.88mg/100 g from FA group. It was observed from this study that acid and fermented, wet and spray-dried silages from Klunzinger's pony fish were considerably rich in organic acids.

Keywords: Organic acids, lactic acid bacteria, spray-drying, fish silage, fermentation.

Changes in Biogenic Amine Contents of Acidified Mantis Shrimp during Ambient Storage

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Abstract

The utilization of seafood processing waste or discard species enhances the efficiency of animal protein usage, minimizes the environmental problems, and adds a nutritional benefit to diets prepared from such materials. Mantis shrimp (*Erugosquilla massavensis*) is a discard marine species for Turkish consumer because of its small size. In order to research the possibilities of using as an animal feed, mantis shrimps were stabilized through ensilage by direct acidification with 3% formic acid (FA) and 1.5% formic acid+1.5% sulphuric acid (FASA) in this study. The effects of acidification on the biogenic amine contents of mantis shrimp were investigated during a 60-day storage at ambient temperatures (26-27°C). This project was supported by research fund of Cukurova University (FBA-2016-6727). The initial TMA content of raw mantis shrimp was found as 30.39mg/100g. There were no significant differences of TMA contents between FA (44.30mg/100g) and FASA (44.42mg/100g) groups at the 60th day of storage. The production of 10 biogenic amines was found in raw mantis shrimp and acidified groups. As a result of this study, acidified mantis shrimp are characterised by high tyramine, agmatine and serotonin concentrations. The putrescine content of raw mantis shrimp was found as 3.00mg/100g, and after acidification it did not change during the storage period ($p>0.05$). The cadaverine content (1.27mg/100g in raw) did not show an increase after acidification during storage in FA and FASA group (1.03 and 1.32mg/100g, respectively). The initial histamine content in this study was 0.17mg/100g. The histamine concentrations were found considerably low in both groups. During storage, maximum histamine content was found as 3.71mg/100g and there were no differences in histamine contents of the acidified groups. The range of the concentrations observed in this study showed that biogenic amines in acidified shrimps might have no adverse effects to animal health.

Keywords: *Erugosquilla massavensis*, biogenic amines, shrimp, acidification, discard.

The Effect of Different Zinc Application Methods on Yield and Grain Zinc Concentration of Bread Wheat Varieties

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Abstract

This study was carried out to elucidate the impacts of zinc treatments on growth, development, quality and yield of commonly sown bread wheat cultivars under field conditions of Çukurova Region. Three different bread wheat cultivars (Adana-99, Ceyhan-99 and Pandas) were experimented in randomized complete blocks-split plots experimental design with 3 replications. Two separate field experiments were performed by two different zinc application methods; via soil and via soil + foliage. In the both trials, 0, 5, 10, 20, 30, and 40 kg ha⁻¹ pure zinc doses were applied to the soil. 0.4 % ZnSO₄.7H₂O solution was used for foliar zinc applications. Current findings revealed that zinc treatments had significant effects on grain yield, grain zinc concentration and thousand grain weight of bread wheat cultivars, but significant effects were not observed on grain protein concentrations. Soil+foliar zinc treatments were more effective in improving grain zinc concentrations. It was concluded that 10- 20 kg ha⁻¹ zinc treatment was quite effective on grain Zn concentrations.

Keywords: Wheat; zinc; grain zinc concentration; yield

Effects of Oil-in-Water Nanoemulsion on The Quality of Farmed Sea Bass and Gilthead Sea Bream Stored at Chilled Temperature (2 ± 2 °C)

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Abstract

Nanoemulsions are also regarded as self-preserving antimicrobials due to bound water in their structure and thus no available water to microorganisms. In the current study, the main aim was to evaluate the effects of nanoemulsion based on sunflower oil-in-water on the sensory, chemical and microbiological qualities of the sea bream and sea bass during storage of 2 ± 2 °C. The oil-in-water (O/W) nanoemulsion (consist of sunflower oil 14 %, surfactant (tween 80) 3%, ethanol 3% and water 80%) was prepared according to Hamouda et al. (1999). Physical properties of emulsion which are viscosity and particle size of droplet, refractive index, density, surface tension was measured by using Mastersizer 2000, Abbe-type refractive meter, picometer, goniometer respectively. For sensory analysis, the Quality Index Method (QIM) scheme developed by Bonilla et al. (2007) was used with modification. The TVB-N content of fish was determined according to the method of Antonocopoulos (1973). The value of thiobarbituric acid reactive substances (TBARs) was analysed according to method of Tarladgis et al. (1960). Free fatty acid analysis (FFA) was carried out by AOCS method (1994). Peroxide value (PV) was analysed according to AOCS method (1994). For microbiological analysis, triplicate samples were taken to estimate total viable counts and psychrophilic viable count from each of four different groups. The results showed that the use of nanoemulsion extended the shelf life of fish 1 or 2 days when compared with the control. Treatment with nanoemulsion significantly ($p<0.05$) decreased the values of chemical parameters throughout the storage period. Bacterial growth was inhibited by the use of nanoemulsion. Nanoemulsion proved inhibitory effect on protein denaturation during refrigerated storage and microwave cooking. Based on the results, it can be concluded that sunflower oil based nanoemulsion extended the shelf life and improved the quality of both sea bream and sea bass fillets during storage.

Keywords: nanoemulsion, quality, protein denaturation, sea bass, sea bream

The Effect of Humic Acids Extracted by Wet-Alkali and N₂/O₂ Gases on Sodium and Some Micronutrient Contents of Corn in Calcareous Soil

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Abstract

In this study, the effects of humic acid i) extracted by wet-alkali technique and ii) activated by N₂/O₂ gases in the alkali condition were investigated on the sodium (Na) and some micronutrient (Fe, Mn, Zn Cu, and B) contents of the corn (*Zea mays L.*) plant (stem+leaf) in the unfertilized and fertilized conditions. In the experiment, two different humic acids were applied separately to the pots at the doses of 0, 100, 200, 400 and 800 ppm with three replications according to factorial design before sowing corn seed. According to the results of variance analysis, the content of micronutrient elements changed according to the type and dose of humic acids. The content of Na in corn decreased due to increasing humic acid levels in both unfertilized and fertilized conditions. The highest Na content was found as 96,60 and 98,99 ppm in the control, respectively. The lowest Na content was found as 58,03 and 34,21 ppm in the dose of HA-800 activated by N₂/O₂ gases in both conditions, respectively. The highest micronutrient contents were found as 20,43 ppm Fe in the wet-extracted HA-800 dose, 13,51 ppm Mn in the HA-400 dose, and 9,68 ppm Zn in the HA-800 dose in the unfertilized conditions; in HA-800 dose activated by the N₂/O₂ gas were found as 11.09 ppm Cu and 8.45 ppm B. In fertilized condition, it was found as 93,82 ppm Fe by N₂/O₂ gas activated HA-400 dose; 68,26 ppm Mn; 51,91 ppm Zn at wet extracted HA-800 dose; 48.04 ppm Cu and 39.63 ppm B at the dose of HA-200 activated by N₂/O₂ gases. As a result, it was determined that wet extracted of humic acid was more affected on Fe, Mn, Zn contents in unfertilized condition, and also activated humic acid by N₂/O₂ gases was more affected on Na, Cu and B contents in fertilized condition.

Keywords: Humic acid, Wet-alkali extract, N₂/O₂ gases, Corn, Na, Micronutrient content

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The Importance of Forage Crops in Crop Rotation and Green Manure Applications

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Abstract

In crop rotation, forage crops, especially legumes, are preferred because they improve the physical and chemical properties of the soil, and have positive effects on yield and quality of culture plants. In many geographical areas of the world, perennial plants like alfalfa and clover, and annual plants like vetch and peas are included in the crop rotation application. Legumes, used as forage crops, leave wastes of their roots in the soil where they are cultivated, and ensure that the soil is enriched in terms of organic matter. In this way, the amount of the organic matter added to the soil accelerates the aggregation in the soil, and helps that erosion is decreased, and nutrients for plants are held in the soil at greater rates. In addition, these crops may be mixed with the soil because they form plenty of vegetative parts in a short time. Generally, the planting and cultivation times of the plants used in green manure in areas where the physical structure of the soil is aimed to be reclaimed change according to the regions and main crop sowing times. Green manure applications are based on placing the wastes of the legumes in the soil after the harvest, and provide plenty of perishable organic matters and nitrogen (N) for the soil. It was determined in many studies that the yield and quality increase in the plants cultivated in these fields after this application. Forage crops are considered among indispensable elements of sustainable agriculture in green manure applications because they improve the physical and biological properties of the soil. In our study, the purpose is to explain the importance of crop rotation and green manure concepts and their applications in terms of soil and plant ecology.

Keywords: Forage crops, crop rotation, green manure, legumes.

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Landscape Design and Planning Criteria in A Historical Milieu

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Abstract

As well as in all the other fine arts in the flow of history, there have been great and important interactions in the gardening and landscape art from the beginning to the end between countries. This study has been achieved to protect and use of historic monuments and its environment to evaluate in a different landscape architecture views. This study includes protection and planning strategies of historic environments. In this context, the selected Safranbolu Yörük Village-Turkey is a field with different values with its historical texture, environmental parameters and in terms of different courtyard-street-garden features. Natural and cultural characteristics of the site have been evaluated in as a sample, and the study covers specifications of traditional structures. Also the assessability in terms of tourism has been revealed. The main method of study is the survey of basic concepts and conservation samples from various sources, the determination of local resource characteristics by field observations and questionnaires for public participation. Also all kinds of scientific researchers, publications, statistics and articles which could contribute to the study were applied. All of the obtained data were synthesized with weighted scoring and proposed plan decisions were produced. As a result; the current situation of the area which is important as an urban site, its problems, and the planning principles related to its solution are included. Planning suggestions have been developed as a decision.

Keywords: Conservation, Historical Landscapes, Site, Safranbolu-Yörük Village

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The Role of Green Spaces in Life Quality of Bursa City

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Abstract

Today, it is estimated that over 50% of the world's population are living in urban areas. By 2050, this figure will increase to 70% and already many cities across the world are struggling to cope with pressure from a rapidly increasing population. Housing supply, pollution and non-planned urbanization are just some of the biggest problems that are impacting the quality of our living, all of which have an impact on what makes great liveable cities. Green spaces are getting smaller with these problems. Accessible green space has long been one of the key components to success as a liveable city within the scope of important changes such as increasing quality of life, psychological healing and reducing pollution. Creating new accessible green spaces in dense cities can be a big challenge. As a result, some cities need to propose at more creative and innovative solutions. These proposals are maybe utopia, maybe are dreams that can be done. In this context, firstly, the Bursa city green space presence was determined. Per capita values are compared with international standards. Is Green Bursa really green? By making comparisons in the districts, what kind of solutions should be brought to concrete cities is discussed.

Keywords: Bursa/Turkey, Green continuity, Green spaces, Landscape

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Seafood Poisoning From Marine Ecosystem

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Abstract

Seafood toxins are formed by phytoplankton (dinoflagellates, cyanobacteria, and diatoms) or bacteria. They are found in seafood especially in shellfish which are filter feeding organisms that accumulate the toxins within their flesh. The toxins are transferred along the food chains which affect fish and humans. Marine toxins expose to humans through ingestion of toxins-contaminated seafood and dermal absorption during contact with contaminated waters. Many marine creatures including molluscs, crustaceans and fish have been reported as potential routes of toxins for human. There are numerous forms of poisoning caused by fish and shellfish consumption, which are commonly scombroid fish poisoning, tetrodotoxin, ciguatera poisoning and shellfish poisoning. Scombroid, one of the most popular fish poisonings, take place worldwide in both temperate and tropical waters. The illness occurs after eating improperly refrigerated or preserved fish containing high levels of histamine with associated amine (cadaverine, putrescine), and often resembles a moderate to severe allergic reaction. etrodotoxin is also one of the best-known marine toxins because of its frequent involvement in fatal food poisoning from puffer fish. Ciguatera poisoning is a form of food poisoning, which is caused by eating finfish that carry ciguatoxin. Shellfish can carry a variety of naturally occurring seafood toxins that cause poisoning in humans including paralytic, amnesic, neurotoxic and diarrhetic shellfish poisoning. Marine toxins found in shellfish are typically the result of the ingestion of different types of algae. Therefore, seafood poisoning and possible risk for consumption of contaminated seafood are highlighted in order to provide more information about food poisoning.

Keywords: Irrigation water quality, Agricultural production

Multiple interactions of soil electrical conductivity in different soil texture types in watershed rehabilitation Cameli district area in Turkey

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Abstract

The Objective of this study was to determine different soil texture types on soil electrical conductivity change. The study was conducted on electrical conductivity ratio and different texture types in Çameli locations was investigated at different soil depths. Variance analysis was performed for the test of the difference according to the regions. First homogeneity test of was applied. Soil electrical conductivity was changed from 0,254 dS/m to 0,463 dS/m in clay soil, from 0,233 dS/m to 0,338 dS/m in clay loam soil, 0,245 dS/m to 0,402 dS/m in sandy-clay soil, 0,197 dS/m to 0,244 dS/m in sandy-loam soil, 0,121 dS/m to 0,458 dS/m in clay-sandy-loam soil. As a result, electrical conductivity changed with different soil texture type in watershed rehabilitation Cameli district area

Keywords: soil texture types, electrical conductivity, soil management

Determination of Adaptation Capability and Yield Components of Some Alfalfa (*Medicago sativa* L.) Varieties

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Abstract

This research was carried out between 2009 and 2011 in order to determine the yield and some agricultural characteristics of alfalfa varieties grown under the ecological conditions of Gürpınar, Van Turkey. In the study three domestic (Kayseri, Bilensoy-80 and Van-population) and three introduced (Planet, Plato and CW-3567) alfalfa varieties were used. According to the results it was found that the alfalfa varieties ranged from 77.9-82.3 cm in plant height, 29.9-33.4 in number of main branches/plant, 8.32-9.38 % in crude ash and 16.55-17.55 % in crude protein and these differences significant among the varieties were not statistically important. In the study the highest fresh herbage yields were obtained from Van population (4357.5 kg / da) and CW-3567 (4324.2 kg / da) whereas the highest hay yields were obtained from CW-3567 (1620.1 kg/da), Van population (1551.9 kg / da) and Kayseri (1519.4 kg / da) varieties. CW-3567 variety gave the highest crude protein yield (282.67 kg/da). Considering these results CW-3567, a foreign alfalfa variety, can be suggested for both the yield and the quality in Van ecological conditions.

Keywords: Alfalfa; *Medicago sativa* L.; cultivar; yield

Textural Properties in Gluten Free "Bazlama": Traditional Turkish Bread

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Abstract

Coeliac is an allergic disease that develops depending on gluten consumption. Therefore, special foods that are produced in special conditions are needed. In the course of study through adding buckwheat flour (BWF) according to displacement principle at %0, %10, %20 and %30 to gluten free flour mix that was obtained by rice flour, corn starch and xanthan gum, flat bread was baked. Control samples were baked by using bread wheat flour. It was aimed to reveal quality features of gluten free flat bread through physical, chemical and textural analyses. When first day hardness were analysed, it was identified that in comparison to products that were baked by using gluten free and control flour (5.50), addition of BWF, regardless of its amount, statistically enhances the hardness (respectively; 9.30, 8.35, 8.70 g). No statistical significance was found in features such as resilience, springiness and cohesiveness in flatbread samples. As gumminess had the lowest level in gluten free products. The highest chewiness (7.39) was found in flatbread sample with %10 BWF. When TPA values of the second day were analysed, the lowest resilience and springiness were found in flatbread samples with %30 BWF, the highest cohesiveness was found in the ones with %20 BWF, no statistical significance was found regarding gumminess and chewiness. When TPA values of the third day were analysed, the lowest hardness levels belonged to control samples, samples with %30 BWF had the lowest resilience, springiness and cohesiveness, flatbread with gluten free flour had the highest chewiness and no statistical significance was reached regarding gumminess in the given examples. It was inferred from the study that by adding %10 BWF to gluten free flour mix, functional features of flatbread can be increased and a contribution to increase fiber intake and eliminate nutritional deficiency can be succeeded.

Keywords: Coeliac, Traditional Turkish Bread, TPA, Gluten free

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Food Fortification and Its Importance in Human Health

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Abstract

Nutritional deficiencies lead serial problems all over the world especially in developing nations due to rising of population, unavailability of enough food resources and lack of government regulations and control. Moreover, irregular lifestyles directly involve in daily eating habits that cause nutrition related metabolic diseases. It has been well known that micronutrients, minerals and vitamins, play a vital role in maintaining optimum health. Micronutrient deficiency is a condition in which an individual is not be able to consume enough dietary micronutrients from diets. Moreover, genetic codes of people also involve in micronutrient deficiency by changing physiological response of the body to micronutrients. Even reasonable levels of deficiency can have severe detrimental effects on human body. Micronutrient deficiencies are commonly seen at the low levels of iron, zinc, iodine, folate, B vitamins, vitamin A and D. Supplementation and fortification are well known strategies to reduce risk of micronutrient deficiency in human. Among these strategies fortification, which is the addition of micronutrients to processed foods, is the most practical, long-term and food-based approach in order to overcome micronutrient deficiency. Food fortification can be specified regarding populations and level of micronutrients in human body. Furthermore, food fortification brings important questions such as (i) how much iron should be added, (ii) which micronutrients can be used together and (iii) what is the vitamin D bioavailability in fortified foods. Thus, process of food fortification needs different scientific area including food science, molecular nutrition, dietetics, physiology, and medicine. The objective of the present review is to discuss nutritional deficiency and health significance of fortification. Moreover, it will be indicated that fortification principles, types, advantages and limitations.

Keywords: Food fortification, nutritional deficiencies, micronutrients.

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15-17 May 2017

Morphological observations for host-plant resistance against aphids in sweet sorghum

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Abstract

Sorghum (*Sorghum bicolor* (L.) Moench) with high biomass productivity and very efficient water consumption is gaining importance as a bio-energy crop. The development of host-plant resistance to insect pests is one of the important aims in sorghum breeding and especially in sweet sorghum. The crop suffers from more than 150 insect species and aphids are the one of the most important pest groups causing economic damage. Thirty sweet sorghum genotypes were evaluated against aphid damage in two locations namely Antalya (lowland) and Konya (highland) under natural heavy aphid infestation in the fields in 2015. The experimental design was randomized complete blocks with three replications in both locations. Morphological observations for the resistance were performed four times during growing period. Aphid damage in both locations was rated by counting aphids based on scale of 1 to 5 where, 1 is highly resistant (0-50 aphids present); 2, resistant (51-300 aphids present); 3, moderate resistant (301-700 aphids present); 4, sensitive (701-1000 aphids present); 5, highly sensitive (1000+ aphids present). Aphid samples were collected from leaves of infested plants from each location and sent to the Directorate of Plant Protection Central Research Institute in Ankara, Turkey for systematic diagnosis. According to diagnostic results, *Rhopalosiphum padi* and *Rhopalosiphum maidis* were the aphid species infested in Konya and Antalya, respectively. The overall morphological observations indicated that, 10 genotypes were scored as highly resistant to *R. maidis* in the lowland while only one genotype was rated 1 (highly resistant to *R. padi*) in the highland field. In addition, fumagine intensity was lower in highly resistant and resistant genotypes. Among the evaluated genotypes, BSS507 exhibited resistance to these two aphids at two locations which demonstrated a valuable genetic resource for sustainable bio-energy production.

Keywords: Bio-energy, Pest resistance, *Rhopalosiphum maidis*, *Rhopalosiphum padi*

Acknowledgement: This study was funded by TUBITAK with a project number of 113O092.

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— Cappadocia/Turkey —

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The Modified Atmosphere and Vacuum Packaging for Seafood Industry: Fact and Gaps

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Abstract

Modification of the atmosphere within the package by lessening the oxygen concentration while rising the content of carbon dioxide and/or nitrogen has extended the shelf life of seafood products considerably at chill temperatures. Modified atmosphere packaging (MAP) and vacuum packaging (VP), together with refrigeration, have become increasingly widespread preservation techniques for perishable food products, which have brought major changes in storage, distribution and marketing of raw and processed products to meet consumer requirements. Nevertheless, certainly the single most essential concern with the use of MAP and VP products is the potential for the outgrowth and toxin production by the non-proteolytic, *Clostridium botulinum* type E which can grow at low temperatures. However, no matter how effectively MAP technology is applied to seafood, no products can stay on the supermarket shelf for a long time. Therefore, commercial and regulatory interest in this technology are not a new concept but novel developments in MAP and VP system such as packaging materials, safety indicators, machinery and related sensor technology offer improvements to produce the next generations of this system. MAP and VP systems could provide further enhancement in seafood shelf-life, organoleptic quality, and product range in order to meet the consumer demands.

Keywords: Modified atmosphere packaging, Vacuum packaging, Seafood, Quality.

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15-17 May 2017

Cultivation Test of Korean Ginseng in Belgrade Forest-Istanbul and Consumer Awareness on Ginseng and Its Products

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Abstract

Non-wood forest products are major sources of food and income mainly for the rural people. Traded non-wood forest products contribute to the implementation of daily necessities and provide employment especially for forest villagers. Internationally traded products, such as ginseng (*Panax ginseng* C.A. Meyer), promote economic development. Ginseng is a very popular plant and its industry has expanded rapidly in recent years. The root of ginseng is one of traditional and folk medicines which have been used for many therapeutic purposes in Eastern Asian countries such as Korea, China and Japan for several thousand years. Various forms of ginseng products have been increasingly consumed all over the world. Further research and knowledge are needed about the cultivation of ginseng in different countries, which have different ecological conditions. In this context, a project titled “Regional Adaptability Test of Ginseng in Forest Area of Turkey” was started on 2015 to test Korean Ginseng growing capability in Istanbul, Turkey. This project has performed on the basis of the memorandum of understanding on cooperation between Istanbul University, Faculty of Forestry and Gyeongsangbuk-do Agricultural Research & Extension Services. With this project, we aim to examine the cultivation possibility of Korean ginseng in Turkey; to find out environmental conditions of suitable areas for ginseng growth; and to perform preference analysis and research for processed products made by ginseng. This study tried to give preliminary results of the project.

Keywords: Cultivation, Ginseng, Non-wood forest products,

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— Cappadocia/Turkey —

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Biological Weapons

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Abstract

Biological warfare is the deliberate spreading of disease amongst humans, animals, and plants. Biological weapons (BW) introduce a bacteria or virus into an environment for hostile purposes, that is not prepared to defend itself from the intruder. As a result, this agent can become very effective at killing plants, livestock, pets, and humans. There are a huge variety of genetically or traditionally modified bacterias and viruses to withstand antibiotics, that could be used as biological weapons, but some of the most common types today are bacteria, rickettsiae, viruses, toxins, and fungi. The Biological Weapons Convention (BWC), the first multilateral disarmament treaty banning the development, production and stockpiling of an entire category of weapons of mass destruction, was opened for signature on 10 April 1972. The BWC entered into force on 26 March 1975.

Keywords: Biological Weapons, Biological warfare

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The Extraction of Black Rose Hip Fruit and Its Seeds in Different Solvents and Their Use in Ice Cream Production As Colorant

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Abstract

Rosa pimpinellifolia L. (black rose hip) fruits may be among the sources for natural colorant materials for food industry due to intensive coloring substances they contain. For this aim, in the present study, colour values (parameters; L , a , b , H° , C and ΔE) of the ice cream samples in which some types of extracts were added as colorants. The extracts were obtained through two different extraction methods, ultrasonic and conventional and two different solvents (purified water and ethanol acidified with 7% acetic acid) using naturally growing black rosehip fruits and seeds picked up from Kars province. Results of the study show that L , a , b , H° and C values for black rosehip fruits and seeds are 12.93, 7.43, 5.13, 34.61, 38.12 and 43.52, 10.42, 12.40, 49.96, 129.21, respectively. L , a , b , H° , C and ΔE values obtained through conventional methods in different solvents change between 14.74-25.93, 1.54-8.52, 0.50-7.02, 15.75-44.60, 0.77-53.17, 4.88-21.51, respectively while in ultrasonic method they were determined to be between 14.34-28.49, 2.17-11.48, 0.70-7.97, 13.71-46.61, 1.52-82.20, 4.12-17.71, respectively. L , a , b , H° , C and ΔE values of ice cream samples coloured by conventional extracts were found to be 62.07-87.11, (-)1.76-6.72, 9.36-12.52, 61.77-100.65, 12.10-84.13, 5.74-32.29, respectively while they were 58.93-84.52, (-)0.39-8.33, 10.17-12.00, 55.24-99.71, 12.65-99.96, 8.63-35.73 for ultrasonic extracts, respectively.

Keywords: *Rosa pimpinellifolia* L., black rosehip, colour, ice cream, extraction

Effect of Lyophilized Black Mulberry (*Morus nigra* L.) Water Extract on Oxidation Stability of Beef Patties

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Abstract

Black mulberry (*Morus nigra* L.) has high antioxidant activity due to its phenolic compounds and bioactive substances. Because of its high antioxidant activity and red color, it is an highly suitable source that can be used as alternative to synthetic antioxidants in meat and meat products. In this research, effects of lyophilized black mulberry water extract (LBWE) on lipid and pigment oxidation of beef patties were determined. For this purpose, primarily LBWE was obtained and then, 0 % (control), 0.1 %, 0.2 % and 0.4 % LBWE were added to beef patties. The prepared beef patties were placed in polystyrene trays, overwrapped with PVC film and stored at 4±1°C for 15 days. Thiobarbituric acid reactive substances (TBARS), pH, metmyoglobin (MetMb) and colour (L*, a*, b*) values of beef patties were determined during storage period with three days interval. The addition of LBWE at different ratios and storage time had very significant effect on pH, TBARS, MetMb, color (L*, a*, b*) values of beef patties (P<0.01). During the storage period, the highest averages values of pH, TBARS, MetMb were determined in the control patties. The average values of these parameters decreased as the LBWE level increased and the lowest values were determined in beef patties treated with 0.4% LBWE (P<0.05). The pH, TBARS and MetMb values increased and the redness (a*) values decreased as the storage time progresses. The beef patties treated with LBWE showed more lipid oxidation stability than control patties. The redness (a*) value was preserved better in LBWE treated patties while the highest a* values were determined in 0.2% LBWE treated patties (P<0.05). The results suggest that lyophilized black mulberry water extract (LBWE) can be successfully used to retard lipid and pigment oxidation in beef patties.

Keywords: Beef patty, black mullberry, lipid oxidation, TBARS, metmyoglobin, colour

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Radial Basis Neural Networks (RBNN) for the Weight Prediction of Walnut (*Juglans regia* L.) Cultivars

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Abstract

In this study, with using three major perpendicular dimensions (L, W, T), some physical parameters such as arithmetic and geometric mean diameter, sphericity, projected and surface area, shape index, volume, aspect ratio, elongations at the width-thickness and vertical orientation were calculated. These parameters were used for weight prediction of ten walnut varieties using Radial Basis Neural Network (RBNN) structure. RMSE values was found to be extremely low (0.0002) for each walnut types namely, Yalova-1, Bilecik, Fernor, Maraş-12, Maraş-18, Kaman-1, Fernette, Sunland, Yalova-3 and Şen-2. Results show that RBNN structure can be used as a novel alternative method in the precisely prediction of these parameters.

Keywords: Neural networks, physical parameters, walnut, weight.

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15-17 May 2017

Effect of Filtration Process on Antioxidant Capacity and Oxidative Stability of Extra Virgin Olive Oils during Storage

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Abstract

Extra virgin olive oil extracted from olive paste contains many impurities that make the appearance of olive oils turbid. Filtration is used as a final process to separate suspended solids. The health benefits of olive oil can be attributed to its chemical composition consist of major and minor components. However, minor compounds that influence olive oil oxidative stability and quality can be affected by the filtration process. Therefore, in this study the influence of filtration process were investigated on antioxidant capacity, α -tocopherol content and oxidative stability of olive oils. Olive oils were obtained from Memecik, Ayvalık and Domat olive varieties extracted with two-phase continuous system. Olive oils stored for a period of 12 months were analysed at intervals of 4 months. Antioxidant capacity of olive oils was determined with DPPH assay. Oxidative stability of olive oils was measured with Rancimat equipment. Alpha-tocopherol analysis was performed with HPLC system. Analysis of variance was applied to indicate the differences among the olive oil samples using the Fisher's least significant difference test at $p < 0.05$ level. Principal component analysis (PCA) with score and loading plots were constructed for visual interpretation of the results. The results indicated that there were no significant differences between the filtrated and unfiltrated samples according to α -tocopherol content, antioxidant capacity and oxidative stability of olive oils. However, significant differences were demonstrated between the storage periods of olive oil samples according to oxidative stability and antioxidant capacity of the olive oils. Antioxidant capacity of the olive oils was correlated with the oxidative stability of the olive oils with Pearson correlation coefficient of 0.813. PCA with three principal components describing 93.8% of total variance revealed that samples were not discriminated clearly into groups based on the results.

Keywords: Olive oil, antioxidant capacity, filtration, storage, oxidative stability

Determination of Some Soil Characteristics of Rangelands in Central and Western Parts of Samsun Province

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Abstract

This study has been carried out in order to determine physical, chemical and fertility properties of rangelands soil located at central and western part of Samsun Province. In this research concept, 50 soil samples have been taken from the study area. In investigated soil, sand, clay and silt values of investigated rangeland soils are 13.45-73.24%, 10.23-65.82% and 13.88-57.93%, respectively. pH of the soils vary between medium acid and slightly alkaline and it was determined that there is no problem in rangelands in terms of salty. In addition, lime and organic matter content are changing 0.08-41.32% and 1.23-8.16%, respectively. Moreover, it has been determined that receivable phosphorous amounts of the soils have differed between 0.2-38.5 kg P₂O₅ da⁻¹, total N contents have differed between 0.071-0.479%, extractable K values, Ca, Mg, Na and B values have differed between 29-612 mg kg⁻¹, 322-10590 mg kg⁻¹, 39-698 mg kg⁻¹, 36-466 mg kg⁻¹, 0.16-6.70 mg kg⁻¹, respectively. When the useful micro element state of rangeland soils have been examined, Fe, Cu, Zn and Mn have been determined as 3.69-146.96 mg kg⁻¹, 0.54-6.18 mg kg⁻¹, 0.16-3.41 mg kg⁻¹, 10.97-103.11 mg kg⁻¹, respectively.

Keywords: Samsun, rangeland, soil fertility

Comparative Evaluation of Phenolic Compounds, Sugars, Organic Acids and Antioxidant Properties of Bursa Siyahi and Sarilop Varieties

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Abstract

Turkey is the leading country in the worldwide for production and export of fresh and dried figs. Sarilop (yellow colored) and Bursa siyahi (dark purple colored) were the Turkey's most widely planted fig varieties. Fig contains high amount of phytonutrients, many of which have antioxidant activity. The aim of this study was to determine and compare the phenolic composition, sugar and antioxidant properties of Turkish figs. Phenolic compounds, organic acids, sugars and other quality parameters of Sarilop and Bursa siyahi figs were investigated in this study. Phenolic compounds and organic acids analysis were performed with LC-DAD-ESI-MS/MS and LC-DAD-RID was used for the sugar analyses. A total of 11 phenolic compounds from four phenolic families (i.e. flavan-3-ols, phenolic acids, flavonols and anthocyanins) have been identified and characterized in the figs. The phenolics content ranged between 86.65 and 92.13 mg/ 100 g (in Sarilop and Bursa siyahi, respectively) and quercetin-3-*O*-rutinoside was the major compound in both cultivars. Three sugars (sucrose, glucose and fructose) and two organic acids (citric and malic acids) were determined. The major organic acid was found as citric acid and fructose and glucose were found nearly in equal amounts. Furthermore, the antioxidant capacities of the figs were assessed via the DPPH and ABTS assays. The antioxidant capacity of Bursa siyahi was found to be higher than that of Sarilop. The significant linear correlation was found between the total phenolic content and antioxidant activity of figs. The results indicate that properly figs can be used as a good source of phenolic compounds.

Keywords: Fig, phenolic compounds, antioxidant capacity, organic acid, sugars.

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LC-DAD-ESI/MSⁿ Characterization of Bioactive Compounds and Antioxidant Potential of Carob Molasses

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Abstract

The carob is the fruit of an evergreen (*Ceratonia Siliqua* L.) cultivated in the Mediterranean area. It has a high content of sugars minerals, organic acids, flavonoids and phenolic compounds which make it a very beneficial product for human nutrition. Carob fruits are used in food industry as a source of many products such as gum, sugar and pekmez (molasses). Molasses, which have been produced for a long time in Turkey, is one of the popular and traditional Turkish foods. However, there is little information about the physical and chemical properties of carob molasses. Therefore, the purpose of this study was to determine the physical and chemical properties of carob molasses obtained from local markets in Adana, Turkey. Liquid chromatography coupled to diode array detection and electrospray ionization tandem mass spectrometry (LC-DAD-ESI-MS/MS) was used for identification and quantification of phenolic compounds and hydroxy methyl furfural (HMF). Antioxidant properties of molasses were determined by DPPH and ABTS assays. A total of 14 phenolics were identified in the carob molasses including phenolic acids and flavonoids (gallic acid protocatechuic acid, gentisic acid, syringic acid, ferulic acid, catechin, epigallocatechin-3-gallate, epicatechin-3-gallate, *p*-coumaric acid, quercetin hexoside, quercetin pentoside, quercetin desoxyhexoside, kaempferol-3-*O*-rutinoside and kaempferol-3-*O*-glucoside). The results showed that the carob molasses can be used as a good source of phenolic compounds and antioxidant potential.

Keywords: Carob molasses, phenolic compounds, antioxidant activity, HMF



The Effect of Different Row Spacing on the Yield and Quality of Forage Rape (*Brassica napus* L. ssp. *oleifera* Metzg)

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Abstract

This study was conducted to determine the yield and quality of forage rape on different row spacing during 2014-2015 growing season. The research was established as a randomized complete block design with four replications and four row spacing (20 cm, 30 cm, 40 cm and 50 cm). In the study plant height, green herbage yield, hay yield, crude protein ratio, crude protein yield, acid detergent fiber (ADF), neutral detergent fiber (NDF), digestible dry matter (DDM), dry matter intake (DMI), relative feed value (RFV), calcium, magnesium, phosphor and potassium characteristics were investigated. In the results of research; plant height, green herbage yield, hay yield, crude protein ratio, crude protein yield, ADF, NDF, DDM, DMI, RFV, calcium, magnesium, phosphor and potassium values were ranged 122.1-144.4 cm, 2114.6-4267.4 kg/da, 426.9-805.6 kg/da, 15.5-18.1%, 76.2-125.6 kg/da, 40.7-44.1%, 46.4-50.5%, 54.5-57.2%, 2.40-2.59%, 101.8-114.9, 1.23-1.31%, 0.19-0.23%, 0.33-0.35% and 1.83-2.18%, respectively. In terms of these parameters; it was concluded that there was no effect on the quality of row spacing but the 40 cm row spacing would be preferable in terms of green herbage, hay and crude protein yields.

Keywords: Forage rape, hay yield, ADF, NDF, crude protein

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Solvent Efficiency on Antimicrobial, Antioxidant Potential and Phenolic Profiles of Carob Pods

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Abstract

Carob pod is the fruit of carob tree (*Ceratonia siliqua* L., Leguminosae family) cultivated in the Mediterranean countries. Carob has gained attention since it is a cheap source of various products such as bioethanol and citric acid and it is widely used as carob bean gum and locust bean gum in food industry. However, there is lack of knowledge on the effect of different solvents on antimicrobial and antioxidant properties along with phenolic profiles of carob pods. Therefore, in this study, efficiency of different solvent extracts (methanol, ethanol, water, 50 % methanol and 50% ethanol) on total phenolic content, antioxidant activity, antimicrobial susceptibility and phenolic composition of carob pod extracts were investigated. Antioxidant activity was determined using DPPH assay. Total phenolic content was accomplished using Folin-Ciocalteu method. Antimicrobial activity of each extract was assessed with standard disc diffusion assay. Identification and quantification of phenolic compounds were performed with liquid chromatography coupled to diode array detection and electrospray ionisation tandem mass spectrometry (LC-DAD-ESI-MS/MS). Antioxidant and total phenolic content of the extracts revealed the effect of different solvent systems on carob pod extracts. Water extracts followed by 50% ethanol and 50% methanol extracts exhibited strong antioxidant activity and gave higher total phenolic content. Antimicrobial susceptibility tests indicated that carob pod water and 50% ethanol extracts showed higher antimicrobial activity against *Esc. coli* while 50% methanol extracts were highly active on *Pseu. aueruginosa* showing inhibition zone higher than 9 mm and no inhibitory effect was found on *Staph. aureus*. Gallic acid and its derivatives with minor differences in quantities were found to be major phenolic compounds in all carob pod extracts. The results can be used to determine the potential solvent system for assessment of characteristics of carob pods.

Keywords: Carob pod, antioxidant, antimicrobial, phenolic composition

Characterization of fatty acids composition in Iranian Phishomi extra-virgin olive oil

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Abstract

Olive oil, one of the important source of fat in the Mediterranean diet elaborated from the fruits of olive (*Olea europaea*), is said to protect against cardiovascular illness and cancer risks owing to its bioactive compositions. Also, olive trees are cultivated in a few regions around the world including USA, Australia and Iran with the same Mediterranean climate. Iran with more than 22,000 hectares area harvested and 36,000 tons olive production ranked 11th among 43 olive-producing countries in 2013. Although, there are plenty of researches on the fatty acids of olive oils, limited investigations exists on the Iranian olive oil cultivars. In this test, fatty acid compositions of olive oils obtained from Iranian Phishomi olive cultivar grown in the northern part of country, Gilan province, were determined using a gas chromatography fitted with a flame ionization detector. A total of 12 fatty acids entailing myristic, palmitic, palmitoleic, margaric, margoleic, stearic, oleic, linoleic, arachidic, linolenic, gadoleic and behenic acids were detected. From them, oleic acid was the most prevailing fatty acid, representing the highest content (63.65 %) in the sample, followed by linoleic acid (16.93 %), palmitic acid (14.14 %) and stearic acid (2.73 %); the amount of the rest of the fatty acids detected in trace amounts. Fatty acid composition might vary between different olive oil cultivars. However, our finding was agreed to the range of those disclosed by the International Olive Oil Council and Codex Alimentarius with elevated resemblance. Apart from fatty acid compositions, percentage of saturated fatty acids (17.48 %), monounsaturated fatty acids (64.82 %), polyunsaturated fatty acids (17.71 %) and the ratios of PUFA to SFA (3.66 %) and oleic to linoleic acids (3.76 %) were also evaluated in oils. Oleic to linoleic acid ratio in studied oils was similar to Greek Throumbolia (2.91–3.19 %) oil.

Keywords: Extra virgin olive oil, Phishomi olive variety, Fatty acids composition

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Wine Aromas

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Abstract

Wine flavour that consists of eight different compounds; such as aromatic compounds, acids, glycerol, malolactic fermentation metabolites, oaks, prefermented sugars, polyphenols, residual sugars, are so important about the quality of wines and aromatic volatile compounds may describe all of the food production process directly just by senses felt in the upper-part of the nose easily. When describing a wine, specialists refer to aromas as fruity, such as citrus, peach and strawberry; spicy, such as thyme and black pepper; vegetative, such as asparagus, green pepper; floral, such as rose, acacia and jasmine; microbiological, such as yeast and lactic acid; nutty, such as walnut and hazelnut; caramelised, such as butterscotch and molasses; woody, such as oak like vanilla and coffee; earthy, such as mushroom compost and mildew; chemical, sulphur and petroleum; pungent, such as alcohol and vinegar; oxidized as sherry and non-foods such as green grass or smoke. Numerous chemical volatile compounds are responsible for these aromas. Some of the aromatic volatile compounds come from the grapes, most of them form during fermentation and the remaining develop during maturation. Aromatic compounds in wines may be classified in three major categories as primary, secondary and tertiary. Primary aromas come from the grape variety and these aromas are also called varietal aromas. In the first nose touch of wine tasting, these aromas are felt directly. Secondary aromas that are known as vinous aromas, develop during pre-fermentation and fermentation process. That kind of volatile compounds determine the quality of applied wine production methods. Tertiary aromas advance during post-fermentation and aging process. Tertiary aromas are also known as “bouquet” and these volatile compounds can be developed by different post-fermentation process such as aging in oak barrels.

Keywords: Wine, grape, aroma, volatile

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Soil and Groundwater Pollution from Agricultural Practices

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Abstract

The semi-arid Southeastern Anatolian Region is a place that has an intensive agricultural production and increasing population. Raising food consumption is directly related to growing population. The increasing population and the gradually raising food consumption are two important phenomenon facient the water and the soil pollution. The basis aim in agriculture is to get the high in quality and quantity crops to compensate for the increasing necessities. Excessive and uncontrolled irrigation and extensive using of chemicals in the arid and semi-arid regions play important roles on the pollution. Pesticides, nitrate contamination due to nitrogen fertilizer, soil salinity, groundwater quality problem were the most important pollution problems caused by agricultural practices in Harran Plain, Şanlıurfa. Environmental pollution from agricultural practices was supported by the regional climate and soil properties. Especially semi-arid climate and clayey soil texture were responsible for the soil salinity. Groundwater contamination was emphasized to be caused by extensive use of pesticides/fertilizers and excessive irrigation. Irrigation and fertilization practices influenced the nitrate concentrations in the groundwater in plain. Specific pesticide residues leached into the ground water. The use of unconscious fertilizers and pesticides accelerated the pollution.

Keywords: Contamination, Semi-arid climate, Harran Plain

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The Field Performance of Vegetable Leaf Miner Parasitoids, *Diglyphus isaea* Reared on Different Host Age

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Abstract

Vegetable leaf miner (*Liriomyza trifolii* Burgess) are accounted for important pests, limiting production in intensive protected vegetable production in Mediterranean Region of Turkey. Chemical control is mostly preferred method by growers in order to control *L. trifolii*. *Diglyphus isaea* is the mostly preferred species of leaf miner parasitoid that are commercially mass reared. This study aimed to determine effect of host age for biological control efficiency of *D. isaea*. Studies to determine the efficacy of *D. isaea* were conducted in two different periods, spring and fall tomato growing season in 2016. Each plot was 10 m² and trial conducted in cages in greenhouses. Tomato plants were infected with 1 *L. trifolii* adults per plant. Mass reared parasitoids on 2 and 3 days old of *L. trifolii* larvae were released one week later of pest infection, as a density of 1 adult per square meter. The experiment was set up in 4 replications according to the design of random blocks. The findings showed both *D. isaea* mass reared on 2 and 3 days old host age in laboratory conditions can be used efficiently in controlling of vegetable leaf miner.

Keywords: *Diglyphus isaea*, *Liriomyza trifolii*, Host age, Mass rearing, Biological control

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Basic Quality Characteristics of Non-Commercial Olive Oils Produced in East Mediterranean Region of Turkey

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Abstract

Olive oil is one of the principal components of Mediterranean diet since ancient time. It can be consumed without any refining treatment. Local people in the Mediterranean region of Turkey, who has small olive field, usually prefer the small scale olive processing facilities for extraction olive oils. Generally, they use these oils for their own consumption. This study was undertaken for the investigation of the basic quality characteristics of non-traditional olive oils produced in the East Mediterranean region of Turkey. Sixteen different samples were randomly obtained from small scale olive oil processing facilities in Adana, Mersin and Hatay. Free fatty acids content, peroxide value, UV spectrophotometric indices (at 232 and 270 nm) and ether-insoluble residue were determined according to official methods. Free fatty acid contents and peroxide values were determined to be in the range of 0.7-13.1% and 16-56 meq/kg, respectively. UV spectrophotometric indices of the all samples at 232 and 268 nm were between 1.91-3.90 and 0.07-2.53, respectively. The ether-insoluble residue values were around 0.1% for most of the samples. Overall results showed that some quality criteria of these non-commercial olive oils were out of the acceptable ranges given in the Turkish Food Regulation.

Keywords: non-commercial olive oil, quality characteristics, Mediterranean region

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Influence of Organic Fertilizer and Soil Amendments on Some Soil Biological Properties

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Abstract

This research was carried out between 2008-2010 to investigate the ability of organic kiwifruit production. Experiments were carried in Hayward kiwifruit species. Efficiency of different organic fertilizers and soil amendments on some soil biological properties were investigated. Clinoptilolite and leonardite as soil amendments, commercial organic fertilizer (Biofarm) as organic fertilizer and two different form of hazelnut husk (withered and compost) used in this research. Experiment was arranged in randomized block split plots design with three replication on two different location. According to the results of soil samples taken every after three years harvesting period. Dehydrogenase activity of experiment soils increased by leonardite application in Irmaksırtı location. Urease activity increased by application of organic fertilizer and soil amendments.

Keywords: Hazelnut husk, Soil amendment, Soil enzymes, Kiwifruit

Some Properties of Turkish Delight Produced with Sour and Sweet Pomegranate Juice

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Abstract

In this research, it was aimed to produce Turkish delight with the addition of sour and sweet pomegranate (*Punica granatum* L.) juice. In the production of Turkish delight, freshly squeezed pomegranate juices obtained by two pressing techniques different from the sour and sweet pomegranate varieties at the level of 20% and 30% were used. Traditional cooking method has been applied in production of Turkish delight. Water soluble dry matter(Brix), pH, total acidity, total phenolic compounds, Hunter colour values (L*, a*, b*), hardness value, water activity of Turkish delights produced with sweet or sour pomegranate juice were determined. In addition, delights samples were evaluated in terms of sensory properties. Water soluble solid value in Turkish delights; 71.3-81.90 Brix; pH value 3.55-4.78; Hardness value 08-1.6 N, Hunter L* value; 27.5-1.3, a* value; 5.7-8.5 and b* value; (-2.2) - (- 0.2), water activity values are; 0.53-0.78. When the results of sensory analysis are examined, the sample of Turkish delight produced by adding 30% of fresh pomegranate juice obtained by hydraulic press squeezing has become the highest taste in terms of many properties and total points. The Turkish delight sample produced simply (without pomegranate juice addition) became the least appreciated product. By adding different levels of fresh sour or sweet pomegranate juice, it has been seen that highly consumer appreciated, nutritious and industrially high value added alternative products can be produced.

Keywords: Sour pomegranate, Turkish delight, sweet pomegranate, sensory evaluation, color

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15-17 May 2017

Investigation of PRL-Rsa I and Hae III gene polymorphisms in water buffaloes breed in Sivas province by using PCR-RFLP method

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Abstract

Water buffalo breeding by breeder project is one of the national animal domestication by breeder projects and this project is ongoing in Sivas province as well as in many other provinces of Turkey Republic. The aim of this project was to investigate gene polymorphisms on Exons 1 and 3 of prolactin (PRL) gene for milk productivity of water buffaloes breeding by breeders in Sivas province. Blood samples were taken from a total of 129 water buffaloes of both male and female genders in Sivas province and DNA extractions from taken bloods were conducted by phenol-chloroform method. DNA samples were amplified by using gene specific primers in Polymerase Chain Reaction (PCR). Amplified PCR products were separated in 2% agarose gel electrophoresis. Amplified PCR products were digested by Rsa I – Hae III restriction endonuclease enzymes in accordance to its respective protocol for to determine gene polymorphisms. Digested PCR products were then separated in 2.5% agarose gel electrophoresis in order to determine allelic polymorphisms. As a result, AA (Hae III) and BB (Rsa I) genotypes from Exon 1 and AA (Rsa I) genotype from Exon 3 of PRL gene were obtained. No gene polymorphisms were detected from used restriction enzymes ($P>0.05$) in Anatolian water buffaloes and was found as monomorphic. In conclusion, it can be said that Anatolian water buffaloes have higher milk yield with high milk fat due to presence of BB genotype in this gene region. This research was supported by the Scientific Research Project Fund of Cumhuriyet University under the project number V-019.

Keywords: Water Buffalo, Prolactin, PCR-RFLP, Sivas, Turkey

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Uşak İli Örtü Altı Üretim Alanlarında Bazı Sebze Tohumlarında Fungal Etmenlerin Tespiti

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Özet

Örtü altı sebze yetiştiriciliğinde birim alandan alınan verimin artırılması ve kaliteli ürün elde edilebilmesi için tohumların sağlıklı olması büyük önem taşımaktadır. Bu nedenle tohumla taşınan çeşitli hastalık etmenlerinin tespit edilmesi ve bunlarla mücadele edilmesi gerekmektedir. Funguslar da tohumla taşınabilen ve örtü altı sebze yetiştiriciliği yapılan alanlarda ekonomik düzeyde ürün kayıplarına neden olan önemli etmen gruplarından. Bu çalışma, 2016 yılında Ağustos ve Ekim aylarında Uşak İli örtü altı sebze yetiştiriciliği yapılan alanlarda bazı sebze tohumlarında (bamya, patlıcan, domates, biber, hıyar, fasulye, börülce, bezelye vb.) fungal patojenlerin tespit edilmesi amacıyla *in-vitro* koşullarda yürütülmüştür. Bu amaçla, doğal olarak enfekte olmuş sebze tohumları çiftçilerin bir önceki yıldan üretim alanlarından toplanan sebzelerin meyvelerinden temin edilmiştir. Tohum kaynaklı fungal floranın tespit edilmesinde Uluslararası Tohum Testi Birliği tarafından (Mathur and Kongsdal, 2003; Al-Askar et.al., 2014) önerilen DFB (deep-freezing blotter) ve AP (agar plate) yöntemi teknikleri kullanılmıştır. Sebze tohumlarında genellikle *Aspergillus niger*, *A.flavus*, *Penicillium digitatum*, *Pythium* sp., *Rhizoctonia* sp., *Fusarium* sp. *Alternaria* sp., *Cladosporium* sp. ve *Rhizopus stolonifer* etmenleri tespit edilmiştir.

Anahtar kelimeler: tohum kaynaklı patojenler, sebze, tohum, örtü altı

Mutation screening on genes encoding adenylate cyclase and Rhs elements for Sulphamethoxazol- trimethoprim resistance on *Vibrio anguillarum*

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Abstract

Vibrio anguillarum is a bacterial pathogen causing Vibriosis disease and leads to high mortality in marine fish aquaculture. The study aimed to understand sulphamethoxazol-trimethoprim (SXT) resistance mechanism of *V. anguillarum*. The bacterial strains were identified by biochemical tests and specific-PCR. Resistance level of sensitive strains were induced by performing them in medium containing SXT (0.2 µg/mL) within TSB+%1 NaCl. Whereas resistant strains were inoculated into medium containing two-fold higher SXT amount than that of previous one depending on performance observed. DNAs were extracted from both resistant and non-resistant individuals. The strains showed different genetic diversity by PCR amplification using specific molecular markers containing repetitive regions. Additionally, plasmids of strains showed remarkable genetic differences. Gene sequences of amplified regions using selected molecular markers display similarity (according to NCBI database) to adenylate cyclase enzyme encoding regulatory signal molecules via specific cAMP-binding proteins. Our findings suggest a remarkable mutation related to adenylate cyclase, transposase and rhs genes encoding secreted proteins of pathogen, which is related to sulphamethoxazol-trimethoprim resistance and virulence.

Keywords: *Vibrio anguillarum*, antibiotic resistance, regulatory genes, signaling



Determination of Yield and Yield Components of Some Silage Corn (*Zea mays* L.) Varieties Under Diyarbakır Ecological Conditions

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Abstract

This investigation was conducted to determine yield and yield components of some silage corn varieties that are suitable for Diyarbakır ecological conditions experienced at GAP international Agricultural Research Training Center experiment area in the main growing season 2015. The experimental design was randomised in a complete block design with three replications. Varieties Burak, Samada 07, TK 6063, OSSK 644, Bolson and Hido were used as plant material in present study. The range height of the plants used in the research was 263.33 – 314.66 cm, the range of ratio of stem plant was 41.93-58.50 %, leaf plant was 18.20 – 22.17 %, cob / plant was 20.37 – 38.50 %. The range of green herbage yield was 5694.85 – 10820.85 kg, hay yield 1431.00 – 3006.33 kg, cop weight 220.00 – 317.33gr /plant. The range of crude protein was 4.09 – 6.27%, crude protein yield was 79.70 – 125.93 kg, silage pH 3.67 – 3.90, ADF (Acid detergent fiber) 30.40 – 35.97%, NDF (Neutral detergent fiber) 52.90 – 60.20%. As a result of the investigation it has been found that Burak, TK6063, Samada 07 and Bolson were the best suitable plants compare to quality of the silage and green herbage.

Keywords: Corn, green herbage yield, main crop, silage.

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Determination of Some Blood Parameters and Macro Elements in Coccidiosis affected Akkaraman Kangal Lambs

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Abstract

Coccidiosis is a protozoal infection which is most prominent in broiler breeding. Nevertheless, coccidiosis can also be seen in various animals such as calves, lambs and yearlings. Even though coccidiosis is commonly seen on various species worldwide, infection is specie specific. Aims of this study were comparisons of some blood parameters which includes leucocyte count (WBC), erythrocyte count (RBC), Hemoglobin (Hg), Hematocrit level (HCT), Platelets count (PLT) and mean volume of erythrocytes (MCV) and some macro element levels which includes iron (Fe), calcium (Ca), phosphor (P) and magnesium (Mg) in both naturally infected and healthy Akkaraman Kangal lambs. Total of 48 Akkaraman Kangal lambs aged between 3 to 8 weeks were used in study in which 24 of them were clinically healthy and other 24 were coccidiosis infected. Blood and fecal samples were collected. Hematologic levels were determined by hemocytometer and macro elements were determined by biochemical analyzer. Normalization test was done for evaluation of obtained data. Independent-Samples t-test and Mann – Whitney U test were used to investigate differences between groups. Eimeria spp. oocytes were observed in all fecal samples from coccidiosis affected lambs during parasitology examination. Decreases in levels of erythrocyte (P<0.001), hemoglobin (P<0.001), thrombocyte (P<0.001), hematocrit (P<0.001) and iron (P<0.001), phosphor (P<0.01) and increase in level of mean volume of erythrocytes (P<0.001) were allfound statistically significant. No intergroup significant difference was found for levels of leucocyte and serum calcium and magnesium (P>0.05). In conclusion, it was thought that differences in some blood parameters and serum macro element levels should be considered in diarrhea cases.

Keywords: Kangal Akkaraman lambs, coccidiosis, hematologic parameters, macro elements

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Effect of Washing with Sodium Chlorite on the Quality of Whole Mushroom (*Agaricus bisporus*)

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Abstract

The cultivated button mushroom (*Agaricus bisporus*) is the most common edible mushroom in the world though hundreds of mushroom species exist in nature. After being harvested, the button mushrooms can be easily perishable due to high water content and no cuticle to protect them from physical deterioration or microbial attack. Therefore, mushrooms lose their commercial value within a few days, and their shelf-lives are very limited as compared to most vegetables especially at room temperature. *Pseudomonas* spp. are the most abundant spoilage microorganism in mushrooms and have frequently been isolated from the button mushrooms, ranging from 6.9 to 7.8 log CFU/g. In order to reduce high initial microbial count and prolong the shelf-life, button mushrooms could be washed with some solutions containing antimicrobial agents that do not adversely affect their appearance and organoleptic quality. Sodium chlorite (SC) is an effective antimicrobial and antibrowning agent. The main objective of this work was to determine the effects of the washing with SC solution on the quality parameters of fresh whole button mushroom. For this purpose, the button mushrooms were washed with SC solution (1 g/L) at different washing times (0.5, 1 and 2 minutes). The whole button mushrooms were stored at 4°C for 12 days, and the change in colour, sensory quality and microbial counts were determined throughout their shelf-life. The highest degree of inactivation in *Pseudomonas* spp. was achieved when the mushrooms were washed with 1 g/L of SC solution for 2 minutes. The colour and sensory quality were very close to the fresh ones even after 12 days of the storage. Results reveal that SC could be used in the mushroom industry to prolong the shelf-life of fresh mushrooms.

Keywords: Button mushroom; shelf-life; colour; sensory; microbial spoilage; *Pseudomonas* spp.



Antioxidants in Dairy Products

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Abstract

Reactive molecules which occur during the digestion of the nutrients are called free radicals. Although oxygen molecules are essential for living, the free radicals known as reactive oxygen metabolites occur during metabolism damage cell components like lipids, proteins and DNA. Antioxidant defense systems are developed to keep free radical generation in aerobic organisms under control and to prevent the harmful effects of such molecules. In some cases, the existing antioxidant defense system can not completely prevent the effect of free radicals and the situation named as oxidative stress occurs. Free radicals may be generated through many ways like UV rays, drugs, fat oxidation, immunologic reactions, radiation, stress, smoking, alcohol and bio-chemical redox reactions. The free radicals generated may cause degenerative disorders like atherosclerosis, cardiac diseases, cancer, cerebrovascular diseases, neurodegenerative diseases, diabetes, acute renal failure, lung diseases (emphysema, bronchitis) and liver diseases. As milk contains lipophilic and hydrophilic antioxidants at the same time due to its polydisperse structure, it is very useful for human body. This study will address the antioxidants in dairy products and their benefits for health.

Keywords: Dairy Products, Antioxidants



Direct Public Offering of Raw Milk: Are Milk Vending Machines Safe?

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Abstract

Raw milk is a very sensitive nutrient which may easily be contaminated by microorganisms harmful to human health and where such microorganism may develop. Maintaining the microbiological quality properties of raw milk may partially be possible by seriously controlling the animal health, milking and post-milking conditions. In our country, the average microorganism load of raw cow's milk is quite above the average values of developed countries. In the "Raw and Heat-Treated Milk" declaration published for the first time in February 14, 2000, although it was projected that total number of live bacteria may be lowered to <100,000 kob/mL within the subsequent 5 years, the target has not been achieved in 17 years passed. At this point, the basic challenge is the ongoing informal production being the major problem of milk industry. Ministry of Food, Agriculture and Livestock (MFAL) exposed the "Regulation on Direct Supply of Raw Milk in Small Amounts". Although the draft regulation proposing the direct public sale of raw milk produced under controlled conditions and inspections at first sight sounds nice, when the insufficient inspections and inefficiency of milk producers in providing the controlled conditions are considered, it is stipulated that direct sales of raw milk will turn into a totally uncontrolled action. Those who support the direct sale of raw milk show the countries where dairy industry is developed as example. When the practices in the US are reviewed, the power to make a decision on this matter is on the state assemblies and it is seen that direct sale of raw milk is prohibited in 36 states. EU has not published a "good practice" regarding the direct sale of raw milk and left the matter to country-specific practices. It is known that EU and USA approaches differ and in some EU countries allow the direct sale of raw material to consumers. In this study, the results of the studies, where the hygiene quality of the raw milk in milk vending machines used for this purpose in countries where direct sales of raw milk is permitted, will be evaluated.

Keywords: Raw Milk, hygiene, quality



The ability to reduce toxicity; zeolite

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Abstract

Heavy metal pollution is the most important issue in our world. Industrial society is a product of heavy metals. This society is the messenger of disease. Many ways have been tried to remove heavy metals. These ways are the zeolite the cheapest and safest. In this review, especially on fish, we investigate the zeolite to reducing properties of heavy metals. The toxicity of zeolite on fish and the protective mechanism of zeolite have been investigated in this review.

Keywords: Zeolite, fish, recover, heavy metals

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The Effect of Irrigation Water Quality on Pepper Yield Under Greenhouse Conditions.

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Abstract

Salt levels in irrigation water are crucial to determine irrigation water quality. The good quality irrigation water sources suitable for agriculture has been decreasing day by days. Determining of plant salt tolerances is necessary to obtain optimum yield and quality for present conditions. As it is well known, the salt tolerances of vegetable plants are lower than other plants. Therefore, it is required to determine yield and quality changes when the plants irrigated with the water which has different salinities especially vegetables. In this study, the effects of six irrigation water salinities and two irrigation water level on pepper plant yield quality were investigated. The experiment was conducted in the 36 pots including soil which has no salinity problem under greenhouse condition at Antalya region on 2015. The experiment was set up as a randomized block design with a factorial arrangement of salinity and water level factors in twelve treatment combinations and replicated three times. The electrical conductivity of the irrigation water salinity treatments were 0.75 dSm⁻¹ as control (T₁), 1.0(T₂), 1.5(T₃), 2.0(T₄), 2.5(T₅) and 5.0(T₆) dSm⁻¹. Irrigation water level treatments were designated as full irrigation (S₁, which received 100% of the soil water depletion) and deficit irrigation that received 75% of the amount received by treatment S₁ (S₂ treatment, 25% deficit irrigation). The soil water content was replenished to field capacity, when the 50 – 55% of available water content was consumed. Other treatment received less irrigation water according to applied water deficit on the same day. The maximum yield were obtained from the full irrigation with 0.75 dSm⁻¹ water salinity treatment (T₁S₁) and 75% of full irrigation with 1.0 dSm⁻¹ water salinity treatment while the minimum yield were obtained from T₆S₁ and T₆S₂ treatments, the salinity of which were the highest. The yield losses on these treatments were about 58%.

Keywords: : Irrigation water quality, soil salinity, pepper, irrigation

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Determination of Reactions of Some Upland Cotton Genotypes to Cotton Wilt Disease Caused by *Verticillium dahliae* Kleb.*

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Abstract

Verticillium wilt caused by *Verticillium dahliae* Kleb. is the most serious disease of cotton plant. The aim of this study is to determine resistance of some upland cotton genotypes developed as prominent properties seed cotton yield, early maturity and high fiber quality and to Verticillium wilt. This experiment was carried out in a randomized block design with four replications in Nazilli Cotton Research Institute under field conditions during 2014-2015. In the study, a total of nine upland cotton genotypes being the tolerant control Carmen variety, the susceptible control Çukurova 1518 variety and the standard control GSN 12 variety were used. 0-4 wilt scale was used for observations of diseases, besides discoloration of the interior of the stems and plants were marked as healthy or diseased. The results indicated that differences among genotypes were found significant for all of the investigated characteristics. Genotypes differences were significant for disease severity on leaves and stem, disease incidence on stem, seed cotton yield, ginning turn-out, fiber fineness, fiber length and fiber strength. As a result, the ES 46-34 and ES 46-47 upland cotton genotypes which are determined to be tolerant to cotton wilt disease and has high yield and fiber technological properties and early tolerance to cotton wilt disease were registered and registered with the name of ES-1 and ES-2 varieties.

Keywords: Upland cotton, *Verticillium dahliae* Kleb., Resistance, Disease severity

Acknowledgement: This study is a part of the experiments conducted by GDARP with project number BS-14/04-02/

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Efficacy of deltamethrin against stink bugs, *Dolycoris baccarum* L. and *Piezedorus lituratus* (F.) on red lentil in Southeast Anatolia Region, Turkey

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Abstract

Chalky spot on red lentil is the most important problem in Southeast Anatolia Region of Turkey. This study was conducted in order to determine the efficacy of Deltamethrin against stink bugs, *Dolycoris baccarum* L. and *Piezedorus lituratus* (F.) (Hemiptera: Pentatomidae) on red lentil. One insecticide, “Decis EC 2.5”, registered for the pests of red lentil, was evaluated for its efficacy against the stink bugs at two different lentil fields in Diyarbakır province in 2014. The experiment was laid out in randomized complete block design with three treatments (200, 300, 500 ml/ha) and five replications at R7 stage (90% of pods are golden-brown of the lentil). Stink bugs density (nymphs and new-generation adults) were also counted in each plot by using 0.25 m² frame. According to our findings, there was not any difference between 200 and 300 ml/ha in terms of statistical analysis, although the most efficacy dose of the chemical was determined on 7th day (46.76±0.77%, p=0.000 and 51.94±1.99%, p=0.000) with 500 ml/ha for both locations. After 10th day, the efficacy of the insecticide was reduced to 44.4-48.8%. As a result, 500 ml/ha doses of deltamethrin has not adequately controlled the stink bugs (nymphs, 2-5 stage and new generation adults) in red lentil. Higher doses were not suitable for controlling the pests, because lentils hay were used as valuable animal feed and availability of insecticide free lentil hay is important for livestock feeding in the region. It is strongly suggested that other control methods such as, cultural and biological control and resistant cultivar should be given priority for controlling the pests.

Keywords: Red lentil, chalky spot, chemical control, *Dolycoris baccarum*, *Piezedorus lituratus*

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Hibernation of *Aleyrodes proletella* in Düzce Province of Turkey

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Abstract

The cabbage whitefly *Aleyrodes proletella* (Hemiptera: Aleyrodidae) is known harmful of Brassica vegetable species. All of the species found in the Aleyrodidae family are phytophagous, and many of them cause economically significant damage in cultivated plants. Both the mature and pre-mature stages of whiteflies directly affect plants by sucking. Whiteflies damage indirectly that the honeydew excreted by these insect cause sooty mold fungi and they transmit viral plant diseases. This study carried out in Düzce province in order to reveal hibernation biology of *Aleyrodes proletella* on black leaf kale (*Brassicae oleracea* Acephala). Field surveys were continued during the period from June 2016 to February 2017 and the population dynamics of *Aleyrodes proletella* were followed. It was observed that population dynamics of *Aleyrodes proletella* decreased in winter period. However, they maintained their survival on lower surface of the leaves of black leaf kale in winter. It was detected an average 12, 23, 10 and 9 whitefly adults in each leaf in November, December, January and February, respectively. In addition, white cabbage (*Brassica oleracea* L. var. *capitata*) plants were investigated during the survey. However, whiteflies did not prefer this plant as a winter host.

Keywords: Whitefly, *Aleyrodes proletella*, Hibernation, Düzce

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Population Dynamics of Cabbage Whitefly in Düzce Province of Turkey

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Abstract

The cabbage whitefly *Aleyrodes proletella* (Hemiptera: Aleyrodidae) is recognized pest of Brassica vegetable species. Population dynamics of *Aleyrodes proletella* conducted between June 2016 and February 2017 in the selected areas of Düzce province. Whitefly samples were taken from the black leaf kale (*Brassicae oleracea* Acephala) plants in the fields where they were unsprayed. As a result of surveys carried out periodically every 15 days, the population of pest started to increase from June, and on the first sampling date, an average of nine whitefly nymphs were recorded on each leaf. The population reached the highest level in mid-October and an average of 272 whitefly nymphs were recorded for each leaf on this date. It was seen that the populations of *Aleyrodes proletella* have fallen after October.

Keywords: Whitefly, *Aleyrodes proletella*, Population dynamics, Düzce

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Leafhoppers (Hemiptera: Cicadellidae) species in different crops in Southeast Anatolia Region, Turkey

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Abstract

Leafhoppers (Hemiptera: Cicadellidae) are important and conspicuous pests attacking on some crops in the world and they are also responsible for transmitting the organisms causing virus diseases in plants. The species of Cicadellidae (Hemiptera: Auchenorrhyncha) associated with some crops in Southeast Anatolia Region, Turkey were studied. At the study it was planned to determine the species in terms of Cicadellidae family which are the vectors of potential virus and other diseases (bacteria, mycoplasma, spiroplasm etc.) on some agriculture products (wheat, barley, lentil, corn, sunflower, sesame, rape, tomato, chili, aubergine etc.). The leafhoppers were collected with sweep net and D-vac. at three different phenological stage of the plants (vegetatif, generative and maturity) in 18 localities in four provinces (Adiyaman, Diyarbakir, Sanliurfa and Mardin) in 2014. Thirteen species, belonging to four subfamilies, were identified. The most abundant and frequent species was *Psammotettix striatus* (Linnaeus 1758) followed by *Zyginidia sohrab* Zachvatkin, 1947 and *Empoasca decipiens* (Paoli, 1930), which were present in all 156 samples. This study also determined differences on the leafhopper species between areas where the crop is located, and/or the phenological stages of the crops.

Keywords: Cicadellidae, Leafhoppers, Southeast Anatolia Region, Turkey

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Determination of Recycling Boxes by Geographic Information Systems (Safranbolu Center Sample)

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Abstract

The distances of Recycling Boxes in urban life are important places. Every Recycling Boxes planned outside of walking distances forms an important place in terms of environmental pollution and health. In this study Safranbolu city center is divided into 6 plots. Each parcel has been identified the location of the waste bin. Then zones of 30, 40 and 60 meters were identified. When the resulting map is analyzed, four areas where high recycle box should be placed are determined. There are 10 areas to be recycled in the middle and 8 areas to be recycled. Areas that are not marked on the map are described as areas that have no priority within the recycling box. As a result, a total of 22 recycling bins are thought to be sufficient to meet our needs.

Keywords: Recycling Boxes, GIS, Safranbolu

The Effect of Foliar Fertilizer Produced From Biogas Waste on Yield and Protein Content of Wheat

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Abstract

This research was carried out to determine the effects of foliar fertilizer (10% N, 5% P₂O₅, 5% K₂O) produced from biogas waste on total yield, thousand grain weight and raw protein content of wheat plant. Experiment was conducted in the randomized plot design with three replications with seeding 17 seeds per pot in the greenhouse of Soil Science and plant Nutrition Department of Agricultural Faculty in Ondokuz Mayıs University. After the germination, plants were thinned and 14 wheat plants were leaved in each pot. Soil moisture content in the pots was kept at field capacity by weighing the pots daily. Foliar applications were done with two different doses of the fertilizer (0.5% and 1.0% rates) at tillering (T), stem extension (S), heading (H) stages of wheat plant and the combination of these stages (T+S, T+H and S+H). Foliar fertilization significantly increased total wheat yield and thousand grain weight over the control statistically (P<0.05). Total wheat yield and thousand grain weight values varied between the lowest 544.3 kg/da and 29.7 g in control treatment and the highest 737.6 kg/da and 36.4 g in 1.0% foliar fertilization treatment at stem extension stage, respectively. Percentage increases in total wheat yield over the control treatment varied between 1.5% and 24.9% with 0.5% foliar fertilization rate, and between 10.5% and 35.5% with 1.0% foliar fertilization rate. Raw protein content in grain also significantly increased over the control by the foliar fertilization statistically (P<0.01). While the lowest raw protein content (15.3%) was determined in control, the highest raw protein content (18.5%) was obtained in 0.5% foliar fertilization treatments at T+S extension stages. It can be concluded that the application of 1.0% rate of foliar fertilization produced from biogas waste only at stem extension stage (S) or together with tillering stage (T+S) increases yield components and raw protein contents in grains of wheat plant.

Keywords: Biogas waste, foliar fertilization, wheat, yield, protein



Chemical Attributes in Soil Quality for Sustainable Land Management

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Abstract

Soil as one of the most important natural resources can be degraded easily due to intensive agricultural practices. Soil degradation decreases soil fertility with decreasing soil physical, chemical and biological quality. Management of chemical soil quality parameters shapes the dynamic parts of soil physical and biological quality. Basic chemical soil quality indicators can be summarized as soil organic matter, soil reaction, electrical conductivity, nitrate-N, cation exchange capacity. Soil organic matter (SOM) increases soil water-holding capacity, and decomposition of SOM releases nutrients essential for the growth of plants and soil organisms. Soil reaction influences on element solubility in soils. The critical EC values depend on plant species restricts plant growth. Soil nitrate is a form of inorganic N that is one of the most important nutrient and available for use by plants. Cation exchange capacity is especially important for the essential plant nutrients of K, Ca, and Mg. Recycling organic wastes in agricultural fields is important to manage chemical soil quality parameters. The evaluation of chemical soil quality indicators must be considered in sustainable land management and agricultural practices.

Keywords: Soil quality, chemical indicators, organic wastes.



Technical Evaluation of Thermal Weed Control Methods In Agriculture and Urban Areas

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Abstract

Pesticide consumption is about 40 to 45 tons per year in Turkey and a valuable amount of this consumption is consisted of herbicides which are used in weed control. But, due to increasing of pesticide cost, concerns about pesticides' risks on environment and human life, increasing interest to organic farming and medical plants, increasing the resistance of some weed sorts to herbicides, scientists have trended to find new alternatives to the herbicides. Besides of herbicides, the most preferable methods seem to be thermal methods. Because, the emissions of these methods don't include any environmental risks if these methods were operated in an appropriate situation. The common thermal methods which are subjected to researches are flaming, hot water, steam and infrared heater that is known a new technology in weed control. However, the some concerns and problems regarding with these thermal methods consist of high fuel expenses, variable effects depending on the weed sorts, fire risks in flaming and potential head risk on cultivated plants' tissue injuries. In this paper, some thermal weed control methods were given and discussed.

Keywords: Thermal methods, flaming the weed, hot water application, steaming the weed, infrared radiation for weed control



Effect of Chickpea Flour on Quality Characteristics of Mardin Peksimet

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Abstract

Chickpeas are rich in proteins, minerals, vitamins and sugars in seeds guaranteeing a high biological value and a wide use in human nutrition. Peksimet is known as a dried bread (rusks) that can last for years without stalling and is often consumed in situations like war and ship travelling in the world. It is usually produced and consumed in the Mardin region of Turkey. It is consumed with soup, tea, ayran, yogurt, molasses, many beverages and food, whether it is dry/crunchy or wetted. The main components of Peksimet are bread type flour, water, salt, yeast or sour dough. Cooled bread is cutted in to slices and dried in oven at 170-210 °C for 20-25 min. In this study, the influence of replacement of wheat flour by chickpea flour on the quality characteristics of Mardin peksimet was analyzed. Chickpea flour was added to bread wheat flour to replace 5 and 10 % w/w of wheat flour. Chemical, rheological, colour and sensory properties were studied. Chickpea flour was incorporated into wheat flour at 5 and 10% substitution levels. The wet gluten content, sedimentation value of the flour blends and the degree of softening of the dough decreased with increase in the level of chickpea flour. Protein, ash, fat and crude fiber values increased on blending of chickpea flour to peksimet wheat flour. The colour of crust and crumb of peksimets got progressively darker as the level of chickpea flour substitution increased, and a gradual hardening of crumb texture was observed as the addition of chickpea flour increased. At the higher levels, the acceptability declined because of the compact texture of the crumb and the strong flavour of the product. The addition of 5% and 10% of chickpea flour to bread flour produced acceptable peksimet.

Keywords: Peksimet, Chickpea, Quality, Sensory, Rheology



Optimization of Production Technology of Keş for Frying

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Abstract

The study was aimed to optimize the production steps of keş for frying produced by traditional methods arounds Bolu province. In order to determine the ideal parameters in the production steps chemical, textural, sensory and color properties of the products were investigated. Ideal fat percentage of milk used in the production was optimized as 3%. With the increase of fat percentage in milk (from 1% to 3%), hardness decreased in the keş samples ($p < 0.05$), adhesiveness and cohesiveness values increased ($p > 0.05$), preference in the sensory evaluation increased. Optimum pH value to end incubation point of yoghurt was best at 4.80. The pH values below 4.80, the yield decreased ($p < 0.05$) in the keş samples. However hardness values increased ($p > 0.05$), adhesiveness and cohesiveness values decreased ($p > 0.05$), preference in the sensory analysis decreased in the keş samples. The most ideal method for removing yoghurt serum was found to be Quick-1 method (200 rpm for 1 h centrifugation, then 400 rpm for 1 h centrifugation and finally 600 rpm for 1 h centrifugation). Thus, the required time was reduced from 2 days to 3 hours to remove the yoghurt serum. Optimum salt level added by weight into centrifuged yoghurt was determined as 1%. The salt content of the keş samples produced in this way became 1.78%. In the drying process using industrial type drier the ideal temperature was determined as 25°C, the ideal drying fan speed was 0.5 m/sec and 10 h was determined as the optimum drying time. Increasing the drying temperature ($> 25^\circ\text{C}$) caused hard layer outside of the samples and prevented drying of internal surface of the keş molds. Accelerating the drying fan speed (> 0.5 m/sec) and the drying period for over 10 hours increased splitting in the samples.

Keywords: Keş for frying, Yoghurt, Production optimization

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Isolation and characterization of *Purpureocillium lilacinum*, *Beauveria bassiana* and *Fusarium* sp. from Soils of Adana Province

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Abstract

Combating pests including viruses, bacteria, fungi, insects and weeds is one of the most important aspects of agricultural production. Chemical pesticides have made a great contribution to the management of these pests for many years. Managing pests with chemicals without toxic residues on crops, impact on non-target organisms, and causing pest resistance is a challenge in agriculture. The widespread and long-term use of chemical pesticides has severely affected both the human health and environment. Therefore, the alternatives are needed to overcome many side effects of excessive pesticide usage on environment and human beings. Of these alternatives, entomopathogenic fungi have an important role in biological control of agricultural pests. In this study, 13 entomopathogenic fungi in Adana and Kahramanmaraş Provinces were isolated including 9 *Fusarium* sp., 3 *Beauveria bassiana* and 1 *Purpureocillium lilacinum* isolates to be able to produce local isolates in biological controlling of pests. These fungi were identified by examining the characteristics of hyphae whether they were asexual or not, development of fruiting organs, structure and measurements of diameters and lengths of conidiophores, measurements and colors of spores under the microscope.

Keywords: Biological control, entomopathogenic fungi, *Fusarium* sp., *Beauveria bassiana*, *Purpureocillium lilacinum*

Susceptibility of Adults of *Sitophilus oryzae* to *Purpureocillium lilacinum*, *Beauveria bassiana* and *Fusarium* sp.

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Abstract

Sitophilus oryzae (L.) (Coleoptera: Curculionidae) is one of the most destructive pests of stored products. Pesticide application is a widely used method for fighting with *S. oryzae* (L.). However, the use of pesticides have adverse effects both on human health and environment. Dense and uncontrolled usage of pesticides and their chemical structure may create residues in soil, water and air. The main trend in the field of plant protection is reducing the pesticide use and developing alternative practices. Among those, application of entomopathogenic fungi is one of the effective methods for biological control of agricultural pests. In this study, the efficacy of 13 entomopathogenic fungi isolated in Adana province including 9 *Fusarium* sp., 3 *Beauveria bassiana* and 1 *Purpureocillium lilacinum* isolates were tested on *S. oryzae* in laboratory conditions. *Purpureocillium lilacinum* (isolate 224), *B. bassiana* (isolate 310) and *F. sp.* (isolate 339) were the most effective isolates against *S. oryzae* in a single-dose experiments with 1×10^7 conidia / ml. Then these isolated were applied in 5 different doses of 1×10^5 , 1×10^6 , 1×10^7 , 1×10^8 and 1×10^9 conidia / ml against *S. oryzae* and dead insects were counted on 5th, 7th, 9th and 14th days. The mortality at these 5 doses for *P. lilacinum*, *B. bassiana* ve *F. sp.* isolates were calculated as, 30%, 52.5%, 73.5%, 100% and 100%; 47.5%, 72.5%, 100%, 100% and 100%; 45%, 93.8%, 90%, 100% and 100%, respectively. LC₅₀ and LC₉₅ values for *P. lilacinum*, *B. bassiana* ve *F. sp.* were 889 and 16231; 4863 and 10154, and 2012 and 10055 conidia / adult, respectively. As a conclusion, *Fusarium* sp. and *B. bassiana* which produced similiar mortalities were more effective isolates against *S. oryzae* than *P. lilacinum*.

Keywords: Biological control, stored products, *Sitophilus oryzae*, *Fusarium* sp., *Beauveria bassiana*, *Purpureocillium lilacinum*



Determining The Most Convenient Conditions for The Production Planning of The Farmers

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Abstract

The main objective of this research was to formulate the most acceptable and applicable cropping patterns by taking into consideration the farmers' objectives and the conditions they have. Under scenarios representing farmer conditions, the optimum farm plans developed by the experts was analyzed. The main material of this research comprises the data obtained from the survey conducted through face to face with the farmers in Izmir province, Menemen, Torbalı and Tire. The study sample size was determined as 120 with proportional sampling, 90% confidence interval and 7.5% error margin. In this study three different planning model proposals with the highest application possibility have been developed by taking into consideration the different approaches that the farmers will adopt and various components that belong to these approaches. In determining the best designs the method of "the best combinations of choices" (BeCA) was employed. BeCA gives optimum homogeneous preference combinations with the aid of 0-1 programming. The best combinations obtained were studied thoroughly with statistical analyses. According to analyses, the model 1 was the best model as regards the farmers' basic objectives was agricultural production with the highest income, and while determining land size taking into consideration the capital and size, taking support from the Ministry of Agriculture engineers for planning, paying attention to the products with higher income while deciding the cropping patterns.

Keywords: Farmer, The Best Combination of Choices, Planning model

Effect of Pine Bark Extract on In Vitro Gas Production

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Abstract

The aim of the present work was to determine effect of different dose of pine bark extract (PBE) containing condensed tannin on in vitro gas production (GP) and organic matter digestibility (OMD), metabolisable energy (ME), and net energy lactation (NEL) of soybean meal (SBM), barley (B) and alfalfa hay (AAH). In the study three doses of the PBE as 0 ppm, 300 ppm and 600 ppm were used. Feedstuffs were incubated in 3, 6, 9, 12, 24, 48, 72 and 96 hours. In vitro gas production of B with 600 ppm PBE was significantly lower ($P<0.05$) than those of B with 0 ppm PBE in 48h incubation. However, in vitro gas production of B with 300 ppm and 600 ppm PBE were tended to be lower than those of B with 0 ppm PBE after 24 h incubations. In vitro GP of SBM and AAH with 300 ppm PBE were found lower than those of B with other two PBE doses but these differences were not significant. Organic matter digestibility (OMD), ME and NEL of B with 600 ppm PBE were tended to be lower than those of B with other two doses of PBE but the differences were not significant. The organic matter digestibility of SBM with 300 ppm PBE was found significantly lower ($P<0.05$) than those of SBM with other two PBE doses. However ME and NEL of SBM with 300 ppm PBE were also not significantly but mathematically lower than the those of SBM with other two PBE doses. Also OMD, ME and NEL of AAH with 300 ppm PBE were lower than those of AAH with other two PBE doses. As conclusion 600 ppm PBE dose has tended to show negative effect on GP, OMD, ME and NEL of barley while 300 ppm dose of PBE has been negatively effective on the GP, OMD, ME and NEL of SBM and AAH but this was also statistically not significant.

Key words: In vitro gas production, pine bark extract, barley, soybean meal, alfalfa hay

The Effect of Extracts of Pomegranate and Grape Seeds on Storage Stability of Ground Goose Meat

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Abstract

In this study, effect of pomegranate and grape seeds extracts on storage stability of minced goose meat samples was determined by comparison with some synthetic antioxidants such as BHA and BHT. For this purpose, goose meat samples was separated 7 equal groups: (1) control (non-antioxidant), (2) BHA (200 ppm), 3 BHT (200 ppm), (4) pomegranate seeds extract-PSE1 (500 ppm), (5) pomegranate seeds extract-PSE2 (1000 ppm), (6) grape seeds extract-GSE1 (500 ppm) and (7) grape seeds extract-GSE2 (1000 ppm). Then prepared samples were stored by covering with stretch film on polystyrene plates at +4 °C for 10 days. Moisture, protein, fat rates were analysed before the prepared samples were stored. In addition, pH values, TBA, water activity, moisture and colour was detected after 1, 3, 7, and 10 d. for samples stored at +4 °C. The experiments were carried out as two replicates and each replicate as three parallel. The effect of antioxidant addition on pH, moisture and water activity values of goose samples was not statistically significant but the effect of storage time was significant. The highest pH and water activity values were determined on the 10th day of storage. Seeds extracts were found that lipid oxidation of goose meat samples significantly inhibit. While it was determined that the average TBA values of the samples varied between 0.143 and 0.110 mg malonaldehyde/kg, the lowest TBA values were obtained from the samples BHA added , the highest TBA values were obtained from the control samples. Degree of oxidation prevention of goose meat samples of antioxidant substances is found respectively as BHA>GSE2=GSE1=PSE2=BHT>PSE1. While there were no significant change in the *b** value of the samples during storage, effect of antioxidant materials was statistically significant used in *L** and *a** values. These results showed that instead of synthetic antioxidants, grape and pomegranate seeds extracts could be used so as to prevention of lipid oxidation and colour changes during storage at +4 °C.

Keywords: Goose meat, grape seed extract, lipid oxidation, pomegranate seed extract

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15-17 May 2017

The Effects of Various Plant Leaves on Storage Stability of Beef Extracts

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Abstract

In this study, the effects of rosemary, laurel, eucalyptus and olive leaves on the storage stability of beef extract were investigated. Neck meats of cattle used to prepare the extract were obtained from a contracted butcher in Konya. Also, rosemary leaf (RL), laurel leaf (LF), eucalyptus leaf (EL) and olive leaf (OL) were obtained from the herbalists in Konya. The beef extract was obtained as a result of boiling the remained neck meat and bone with the certain amount of water and in time after the pieces of meat on the beef neck was removed. Prepared the beef extracts were divided into six equal groups: (1) Control (no added plant leaf/BHA), (2) BHA (200 mg/kg), (3) rosemary leaf (%1), laurel leaf (%1), eucalyptus leaf (%1) and olive leaf (%1). Prepared samples were kept under refrigerator conditions for 15 days. Moisture, protein and fat were assayed in the beef extract samples on the 0th day. The pH, moisture, thiobarbituric acid and the colour (L^* , a^* and b^*) analyses were carried out periodically in the samples of beef extract on 1st, 3rd, 7th and 15th days. The experiments were carried out in triplicate samples with two replications. The pH values were found significant statistically the changes by storage time and the added material in beef extract samples and the highest pH values were determined at the control group samples for all day of the storage. It was determined that the mean TBA values of the samples varied between 0.1-0.7 mg malonaldehyde/kg. The lowest TBA values were determined in the extract samples added with rosemary leaf (1%). L^* , a^* and b^* values were found to vary ranged from 65.6 to 76.5, -2.3 to 1.3 and 6.4 to 14.5, respectively. As a result; the usage of rosemary can be suggested as a natural antioxidant in the preparation of beef extract samples.

Keywords: Rosemary, laurel leaf, eucalyptus leaf, olive leaf, beef extract

Antibiotic Resistance Profiles of Vancomycin Resistant Lactic Acid Bacteria Isolated from Animal Originated Foods

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Abstract

The aim of this study was to isolate of presumptive vancomycin resistant enterococci (VRE) from animal originated food samples obtained from different cities of Turkey and to determine antibiotic resistance profile of VRE isolates. For this purpose, a total of 340 animal originated food samples (85 dairy products, 85 meat and meat products, 85 poultry and 85 fish samples) were investigated to detection of prevalence of presumptive VRE by using Enterococcosel Agar supplemented with vancomycin (4 µg/mL). A total of 47 presumptive VRE strains were isolated from 39 out of 340 food samples. Presumptive VRE isolates were identified at genus level by Gram staining, catalase and culture tests. Genotypic identification of isolates at species level were done by 16S rDNA homology and species-specific polymerase chain reaction (PCR) analysis. DNA sequence analysis of PCR products were done at REFGEN Gen Araştırmaları ve Biyoteknoloji Ltd. Co. (Ankara University Technopolis, Ankara). Isolates were identified as members of *Enterococcus* (55.32 %), *Pediococcus* (38.30 %) and *Weissella* (6.38 %) genera. The dominant vancomycin resistant species were determined as *E. gallinarum* (44.68 %) and *P. pentosaceus* (25.53 %). Antibiotic resistance profiles of isolates were determined by disk diffusion method using 18 commercial antibiotic disks obtained from Oxoid Ltd. The results of disk diffusion test showed that antibiotic resistance or intermediary resistance are widespread in vancomycin resistant LAB tested in this study. In addition tested LAB were found resistant to clinically important antibiotics. Twenty three (88.46 %) *Enterococcus* strains displayed resistance from 1 to 7 antibiotics. All *Pediococcus* and *Weissella* isolates exhibited resistance from 3 to 8 antibiotics. Antibiotic resistance in bacteria is a global problem. Presence of antibiotic resistant bacteria in food stuffs was concern for consumer health. In this study LAB isolated from animal originated foods were resistant for clinically important antibiotics justifies this concern.

Keywords: *Enterococcus*, lactic acid bacteria, vancomycin, antibiotic resistance, animal originated food

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— Cappadocia/Turkey —

15-17 May 2017

Potential Use of General Regression Neural Network to Estimate Colour Parameters of Apples

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Abstract

Colour is the most significant quality attribute of various fruits. It also greatly influences consumer preferences. Chroma meters are commonly used to measure colour parameters of fruit. Chroma meters measures CIE L*(levels of brightness between black and white), a*(balance between red and green), b*(relative amounts of yellow and blue). These parameters are used to define peel colour of apples. In this study, General Regression Neural Network (GRNN) model was used to estimate relevant colour attributes of different apple varieties. According to the simulation results, Root Mean Square Errors (RMSE) were found to be 0,687 for Amasya, 0,546 for Starking, 0,630 for Granny Smith, 0,656 for Pink lady, 0,697 for Golden Delicious, 0,690 for Arapkızı. It was concluded that present model yielded quite accurate and reliable outcomes for colour estimation of apples.

Keywords: Apple, colour index, GRNN.

Effects of Pre-treatments Some Sweet Cherry Cultivars On Epicatechin and Chlorogenic Acid Content During The Storage

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Abstract

Sweet cherry (*Prunus avium* L.) is one of Turkey's major export products, but also the perishable fruit species. Different preservation methods are applied to sweet cherry fruit, which is more likely to be consumed as fresh fruit, in order to increase conversation time and maintain the quality characteristics. One of the these methods are coating with essentail oils which also utilized antimicrobial properties. In this research, 0900 Ziraat, Regina and Sweetheart cherry varieties are widely grown in Turkey and exports change of phenolic compounds were investigated during storage. In this study, one of the widely grown thyme and sage essential oils (carvacrol and thujone) were used, carvacrol and thujone. It was placed in a gauze impregnated media and sodium bicarbonate (2%) was immersed MAP (modified atmosphere packaging) te be kept cold were stored for 8 weeks. Storage time during the amounts of chlorogenic acid and epicatechin is one of the major phenolic compounds were determined every 15 days. The variance of these compounds were evaluated for 8 weeks storage. During the 8 weeks of storage epicatechin and chlorogenic acid were determined to be increased in all varieties. Chlorogenic acid was determined from 30.30 to 65.60 mg /100g for 0900 Ziraat, from 33.27 to 58.30 mg / 100g for Sweetheart, while from 53.50 to 112.43 mg / 100g for Regina variety. Epicatechin was determined 0900 Ziraat variety 6.70 to 9.87 mg / 100g in the kinds Sweathart 6,60-10,50mg / 100g, Regina cultivar 6,87-10-97 mg / 100g in was determined.

Keywords: Sweet Cherry, essential oils, phenolic compounds, post-harvest preservation.

Antioxidant properties of some wild mushrooms

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Abstract

The antioxidant activity and properties of 12 wild mushrooms (*Lactarius piperatus*, *Tricholoma anatolicum*, *Amanita caesarea*, *Lactarius delicious*, *Lactarius sanguifluus*, *Cantharellus cibarius*, *Hydnum repandum*, *Picoa lefebvrei*, *Ramaria aurea*, *Lactarius semisanguifluus*, *Craterellus cornucopioides*, *Laccaria laccata*) collected from Turkey were evaluated. Their methanolic extracts were used to determine antioxidant capacity (TAC), total phenolics and flavonoids. 2,2-Diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activities were measured to evaluate antioxidant capacity of the extracts and expressed as trolox equivalents (TE). The amount of total phenolics was determined by using Folin–Ciocalteu method and Flavonoid contents in the extracts were determined by a colorimetric method. Wild mushrooms were found to be high in antioxidant phytochemicals, such as phenolics (575.10-2156.40 mg GAE/100g DW), flavonoids (103.01-310.89 mg CE/100g DW). The TAC values of the spices ranged from 525.32 to 1693.85 µmol (TE)/100 g DW.

Keywords: Wild mushroom, extract, antioxidant activity, phenolic, flavonoid

Development of Individual Flow Rate Prediction Functions for Different Crop Seeds and Granular Fertilizers Metered by Fluted Rolls

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Abstract

The amount of material flow rate from a fluted roller could be considered as a simple phenomena but the problem actually is complex since many factors contributes to this physical system. In such a system; constructional, operational parameters and the properties of the material being conveyed determine the flow rate. The constructional parameters can be considered as flute diameter, flute shape, flute volume, the number of flutes, flute helix angle, active flute length. The operational related parameter is the rotational speed of the fluted roller metering device. On the other hand, the physical properties of the material conveyed also affect the flow. Under the same constructional and operational conditions, the flow rate varies from one material to another. The main properties of a material in this study were considered to be the bulk density, sphericity and the size of the material and the friction coefficients of material on material and material on surface. Although analytical models based on fundamental or basic principles are critical to provide a good insight into any physical or biological process, some systems are too complex and present a great challenge for proper mathematical treatment of the problem. In this study, some published data in the literature for different crop seeds such as wheat, alfalfa, carrot, canola, coated canola and onion, and for some fertilizers such as ammonium sulphate and diammonium phosphate were used and filling coefficients of these materials were calculated using regression analysis. The filling coefficient for any material can be found using the equation as follows, $Q = \alpha \cdot A \cdot L \cdot N$ where; Q: Flow rate (kg min^{-1}), α : filing coefficient, A: total area of the fluted roll (cm^2) L: length of the roll (cm), N: rotational speed of the roll (min^{-1}), γ : bulk density of the material (kg cm^{-3}). Obtaining filling coefficient for each of the above written materials seperately will lead to develop a generalized function in order to predict flow rate from fluted rollers. This study is considered to be the initial step of developing a generalized function since filling coefficients to be found for different materials can be correlated to material properties as indicated above. It is believed that the developed filling coefficient function will help designing fluted rolls as used in seeders for metering devices.

Keywords: Metering unit, driller, modelling.

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Factors Affecting Milk Urea Nitrogen (MUN)

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Abstract

In the feeding of dairy cattle, attention should be paid to the roughage/concentrate and energy/protein ratios and season. One of the most important indication of these ratios are milk urea nitrogen (MUN) level. This can be an important indicator of feed cost, animal health and reproductive physiology. The factors affecting the MUN can be listed as feeding management, dry matter intake, digestible protein, non-digestible protein, non-structural carbohydrate ratio of the diet and water consumption. At the same time, there may be a difference between season and breed in terms of MUN value. The MUN value in Holstein cattle is lower than that of Jersey breed. It is reported that MUN value is higher in summer months in the same breed. The MUN value between 10-16 mg / dL is considered normal, MUN below and / or above these values may be indicative of problems in the breeding and feeding management and precautions should be taken. MUN value outside the normal range negatively affects immune function, milk production, reproduction efficiency and survival of embryo. A low MUN level of 8-10 mg / dL probably indicates the inadequacy of protein content in the diet. This can lead to lower milk yield and lower milk protein. The MUN level of more than 16 mg / dL is indication of a high protein content and presence of high ratio of rumen degradable protein in the ration. High MUN levels are also indication of high N excretion due to non-utilized excess protein in the cattle rations. Therefore high amount of nitrogen releases to the environment. In our review, we will focus on the factors affecting milk urea nitrogen (MUN) value in dairy cattle and the solutions of these factors.

Keywords: milk urea nitrogen (MUN), dairy cattle, protein, degradable protein, energy/protein ratio



Electronic Tongue Applications In Food Industry

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Abstract

In this review, definition, structure and applications of electronic tongue are discussed. Sensory analyses and instrumental techniques are often used to determine the flavour of food. Consumer panels give the most authentic results in terms of real taste of the product. However, a number of problems such as the need for educated staff, the fact that they are expensive and the lack of standardization, and the satisfaction of the taste have led to the search for alternatives. Instrumental applications require costly equipment (GC, HPLC, etc.), although high precision measurements can be made. In addition, these devices are not suitable for analysing the samples in place. In recent years the concept of electronic tongue has been frequently mentioned in the food sector. Electronic tongues are designed with the aim of being able to remove these negativities and to analyse the food in their place. Also, artificial senses are not subjective like natural senses and in some cases they are much more sensitive than human tongue. It is advantageous that the electronic tongue works without fatigue and that it is not infected even in toxic specimens. In this study, it is aimed to give information about electronic tongue applications in food industry.

Keywords: Electronic tongue, sensory analyses, application of food industry, structure of electronic tongue

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Microbiological, Physicochemical, Antioxidant and Antimicrobial Properties of Mulberry Vinegar

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Abstract

In the present study, mulberry vinegar produced traditionally and industrially were investigated in terms of their microbiological, physicochemical, antioxidant and antimicrobial properties. The numbers of lactic acid bacteria (LAB) and acetic acid bacteria (AAB) in the traditional home-made vinegar were higher than industrial vinegar while yeast and mould counts were lower. The amount of total phenolic contents was 557.5 mg GAE/L in traditional vinegar and 523 mg GAE/L in industrial vinegar, while organic acid content of traditional vinegar was lower than industrial vinegar. During the evaluation of the *in vitro* antioxidant activity *via* DPPH assay, traditional and industrial vinegar showed 76.74% and 40.52% free radical scavenging abilities, respectively. The antimicrobial activity of vinegar samples against eight bacterial strains (*Listeria monocytogenes*, *Enterococcus faecalis*, *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* O157:H7, *Salmonella* Typhimurium, *Escherichia coli*, *Pediococcus acidilactici*) was examined. In the determination of the *in vitro* antimicrobial activity of vinegar, preliminary antibacterial screening (disk diffusion method), minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) assays were done. The minimum inhibitory concentration (MIC) was determined for each microorganism using a 96-well microtiter plate method. Both types of vinegar exhibited inhibitive effect on all test microorganisms at concentrations ranging between 3.12 and 25 % (MIC, v/v). The most sensitive bacteria to industrial mulberry vinegar were *B. subtilis*, *E. coli* O157:H7 and *S. Typhimurium* (MIC of 1.56%) while *S. Typhimurium* (MIC of 12.5%) was the most sensitive one to traditional mulberry vinegar. The MIC values of the neutralized vinegar showed that the inhibitory effect mainly related with the acid content of the product, but the total phenolic contents of the vinegar were also contributed the inhibitory effect. These results indicated the potential of traditional and industrial mulberry vinegar as antimicrobial and antioxidant substance for food applications.

Keywords: Mulberry vinegar, antimicrobial, antioxidant, phenolic

Effects of occasional tillage on compaction of a clayey soil**

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Abstract

Compaction problem occurs under long-term conservative tillage practices when soil loosening is not adequate or never takes place. The occasional tillage called strategic till (ST) where moldboard plow is used only once in no-till is considered as a prevailing management option to the solution of compaction in no-till systems without degrading the long-term soil quality benefits. The purposes of this study are i.) to determine the effects of tillage practices which have been practicing from 2006 in a clayey soil, and ii.) evaluate the effects of strategic tillage on compaction parameters of soil. The experiment was conducted on the Arik Soil Series located at the Experimental and Research Station of Cukurova University. The tillage treatments are: Conventional tillage with stubble (moldboard plowing) (CT-1), Conventional tillage with stubbles burned (CT-2), Heavy disc harrow reduced tillage (RT-1), Rototiller reduced tillage (RT-2), Heavy disc harrow zero soil tillage (HZT), no-till or zero tillage (ZT) and ST on no-till treatment. Penetration resistance (PR) and bulk density (BD) of 0-10 cm, 10-20 cm and 20-30 cm depths were determined as the indicators of soil compaction. Tillage practices had significant effects ($P < 0.01$) on PR and BD at three depths. The RT-1, RT-2, HZT and ZT practices led to a significant compaction (> 2 MPa) in upper 30 cm depth. CT and ST practices where moldboard plow is used to convert and loosen decreased (< 2 MPa) the compaction. The lowest mean BD (1.17 g cm^{-3}) in 0-10 cm depth as in other two depths was obtained in ST practices. The BD values of 0-10 cm in order of ascending was CT-2 (1.23 g cm^{-3}), RT-1 (1.26 g cm^{-3}), HZT (1.28 g cm^{-3}), RT-2 (1.29 g cm^{-3}), CT-1 (1.32 g cm^{-3}) and ZT (1.36 g cm^{-3}), respectively. The results revealed that ST practice can successfully be used to eliminate the compaction problem of long-term no till fields.

Keywords: Soil compaction, Strategic soil tillage, No-tillage, Penetration resistance, Bulk density

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15-17 May 2017

Assessment of the Seedling Reactions of Some Hulless Barley Cultivars and Genotypes to *Cochliobolus* Leaf Spot Disease

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Seedling reactions of 2 hulless barley cultivars, one hulless barley cultivar candidate and 19 hulless barley genotypes to two isolates of spot blotch agent *Cochliobolus sativus* obtained from Yozgat and Hatay provinces of Turkey were determined under greenhouse conditions. Hulless barley cultivars Yalın and Özen showed intermediate infection responses. The reactions of hulless barley genotypes ranged between intermediate infection response and high infection response. Hulless cultivar candidate (Ankara candidate 8) showed low infection response. Virulence difference between the isolates was observed. Yozgat isolate was more virulent.

Keywords: Barley cultivars, *Cochliobolus sativus*.

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15-17 May 2017

Herbivorous Insects As The Main Threat Factors To Food Storage

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Abstract

Insects are the most diverse species of animals living on earth. Insects are undoubtedly the most adaptable form of life as their total numbers far exceed that of any other animal category. The majority of insects are directly important to humans and the environment. Insect pests inflict damage to humans, farm animals and crops. Herbivorous insects are said to be responsible for destroying one fifth of the world's total crop production annually. One major reason why there are pests is the creation of manmanipulated habitats, that is, agroecosystems that fulfil man's needs, where crops are selected for their large size, high yield, nutritious value, and clustered in a confined area. Storage is the most important and critical postharvest operation. Many of the crop varieties that were developed during the past 30 years produced high yields, but, they also had poor storage characteristics. Insect pests inflict their damage on stored products mainly by direct feeding. Some species feed on the endosperm causing loss of weight and quality, while other species feed on the germ, resulting in poor seed germination and less viability. Thus, due to damage done by insects, grains lose value for marketing, consumption or planting. In addition to direct consumption of the product, insect pests contaminate their feeding media through excretion, moulting, dead bodies and their own existence in the product, which is not commercially desirable. Two major groups of insects harbour the mostly economically important post-harvest insect pests: Coleoptera (beetles) and Lepidoptera. As a result, the main purpose and content of this work is to analyze insects as the main threat factor to food deposits with the list of the most common postharvest and storage pests, their biology, distribution and common host plants.

Keywords: Herbivorous insects, Pests, Food storage, Agroecosystems, Marketing



Population Parameters of *Chrysoperla carnea* (Stephen) (Neuroptera: Chrysopidae) fedon *Chromaphis juglandicola* (Kalt.) (Hemiptera, Aphididae)"

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Abstract

Small walnut aphid (*Chromaphis juglandicola* (Kalt.) (Hem.:Aphididae) is one of the most important pests in walnut orchards in Lake Van Basin, Turkey. In this study, the life-table parameters reflecting population growth rate of *Chrysoperla carnea* (Stephen) (Neuroptera: Chrysopidae) which is one of the important predators of the pest were determined. Study was carried out at 25± 1 0C, 65±5% RH, and a photoperiod of 16:8 (L:D) h (5.000 lux) under laboratory conditions. Life table parameters were estimated according to age-stage, two-sex life table method. Variances and standart errors of population parameters were obtained according to Paired-Bootstrap method by using TWOSEX-MS Chart software. The values obtained for the intrinsic rate of increase (r), finite rate of increase (λ), net reproductive rate (R_0) and mean generation time (T) were 0.0723 d⁻¹, 1.0750 d⁻¹, 62.48 offspring and 57.16 d, respectively. Results obtained might be used in pest management program that will be prepared for the aphid.

Keywords: *Juglans regia*, *Chromaphis juglandicola*, Life table

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Weight Prediction of Maras-18 Walnut (*Juglans regia* L.) Cultivar Using Modular and Radial Basis Neural Networks

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Abstract

Neural networks (NNs) are known as computational models based on the structure and functions of biological neural networks. NNs have been widely used in various disciplines from computer-integrated manufacturing to robotics and autonomous systems. In agriculture, data prediction and classification of agricultural products can be carried out by NN models. In this study, Modular Neural Network (MNN) and Radial Basis Neural Network (RBNN) structures were used to predict the weight of Maras-18 walnut cultivar based on some physical parameters. RMSE values were found to be 0.6 and 0.0002 for MNN and RBNN structures respectively. According to the results, RBNN structure had a superior performance in the weight prediction of the walnut cultivar.

Keywords: Modular Neural Network, Radial Basis Neural Network, walnut, weight.

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Optical Sensing Methods in Weed Detection

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Abstract

Weeds, leading to yield losses at various rates by competing with culture plants for water, minerals and the field. It is necessary to control the weed density in order to provide increase the yield by preventing the damage the cultivated plant. The effectiveness of weed control applications depends on the spread of the weeds and the precise identification of the weed species. Optical sensing technology is widely used for growth of plants, determination of appropriate harvest time, definition of shape characteristics of the seeds, colour analysis in fruits, pesticide drop size in agricultural pest control, pesticide coverage ratio, damages caused by harmful insects and optimization of weed detection. In this study, optical and spectral methods that can be used for weed detection which is allows plants protection in local optimized, have been examined. The success and scope of the methods have been evaluated and suggested.

Keywords: Image processing, weed, yield.

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Nutrient Content of Mealworms (*Tenebrio molitor* L.) and The Utilization Possibilities in Poultry Nutrition

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Abstract

Poultry require high amounts of protein, amino acids and energy for feather development, meat and egg production. Herbal nutritional feeds have lower amino acid content, protein qualities and mineral levels. Therefore, corn and soybean meal used in feeds are sometimes not sufficient to meet the nutritional needs of poultry. In such cases, more expensive products like fish meal are used. However, there are feed sources that have comparable levels of nutrients to products such as fish meal, yeast and malt. Mealworms, earth worms, grasshoppers and houseflies are only some of the sources that can be evaluated for the feeding of poultry. One of the important insects with potential for use as a feed source instead of corn, soybean meal and fish meal in poultry rations is mealworm. Easy to breed and feeding *Tenebrio molitor* L. (TM) is rich in protein, fat, energy, fatty acids and can be used successfully in poultry feeding. However, EU legislation, difficulties in production and high cost of production limit the use of mealworm in the feeding of poultry. In this review study, the utilization possibilities of mealworm in organic poultry feeding were examined.

Keywords: Mealworm (*Tenebrio molitor* L.), Poultry, Alternative feed, Organic feeding



Tannins and Their Effects on Poultry Nutrition

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Abstract

One of the most important secondary metabolite found in cereals, legumes, vegetables and fruits is tannins. Tannins are polymeric phenolic compounds in the amorphous structure which are nitrogen-free, hydrolyzed and condensed forms. Tannins that can be hydrolyzed are found in smaller amounts in plants. Condensed tannins have flavanoid units resistant to hydrolysis. Tannins have antioxidant, anticarcinogenic, antimicrobial and antiparasitic functions. On the other hand, due to their anti-nutritional contents, they have some negative effects on poultry. According to ruminants, poultry are more sensitive to tannins. High amounts of tannins lead to performance losses in poultry, such as reduced appetite, reduced feed intake, and poor nutrient absorption. Tannins, also known as potent liver and kidney poisons, cause poultry to develop bone disorders and pathological changes at various levels in tissues, irritated in esophagus, necrosis in crop, gizzard, and duodenum. In this review, the characteristics of tannins, their classification, practices that reduce the amount of tannins, and the general effects of tannins on feeding of poultry have been examined.

Keywords: Tannin, Phenolic compound, Poultry nutrition, effect

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Microbiological and Chemical Safety of Ketchup

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Abstract

Ketchup is a sweet and tangy sauce, typically made from tomatoes, vinegar, sugar and seasonings such as onions, allspice, cloves, cinnamon, garlic and celery. It is a shelf-stable product due to low pH, low water activity, sodium benzoate and heating. The spoilage microorganisms (such as molds, yeasts, *Bacillus*, *Clostridium* and aciduric bacteria) can survive and contaminate with ketchup from tomato puree, spices, sugar, starch, etc., and lead to significant economic loss. Molds can grow only on the surface area of ketchup exposed to air. Some microaerophilic and facultative anaerobic yeasts and *Lactobacillus* can grow in ketchup. *Bacillus vulgaris* causes darkening and gassy spoilage, and separation of the emulsion. Yeasts (such as *Zygosaccharomyces rouxii*, *Zygosaccharomyces bailii* and *Pichia membranaefaciens*) have remarkable spoilage potential on ketchup due to being highly acid resistant and relatively osmotolerant. Ketchup with high pH values (above 4.1) offers a potential risk of pathogenic bacteria by *Salmonella*, *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Staphylococcus aureus*, *Clostridium botulinum*, *Clostridium perfringens* and *Bacillus cereus*. Ketchup can contaminate with detectable amounts of mycotoxins (such as aflatoxins) and pesticides. The most effective factors causing chemical spoilage on the color stability of the stored ketchup are: storage temperature, phenolic compounds, iron ions and reducing sugar. An important color change over time in ketchups is the formation of a black layer ("black throat") on the product in the throat of the bottle due to the reactions between the phenolic compounds that have passed from spices and iron ions in the product. Many factors influence the shelf life of ketchup, such as raw material, temperature, pH, microorganisms, water activity and ingredients used in ketchup production. The main factor determining the shelf life in terms of microbiological and chemical stability in ketchup is acidity and oxygen respectively.

Keywords: Ketchup, Spoilage, Pathogens

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Microbiological Safety of Chocolate

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Abstract

Microbial spoilage of chocolate is not possible due to its low water activity and high sugar content. Microbial growth appears on chocolate due to the high relative humidity, packaging material, use of improper ingredients, and inadequate processing and hygienic conditions. Some xerophilic molds (such as *Betisia alvei*, *Chrysosporium xerophilum* and *Neosartorya glabra*) associate with chocolate and cause spoilage. High levels of lipolytic enzymes from *Bacillus* and molds may adversely affect fats used in chocolate. *Salmonella* can contaminate chocolate from cocoa and other ingredients, and survive the manufacturing process. Mostly children are susceptible to infection from chocolate containing *Salmonella enterica* subsp. *enterica* serovars (such as *S. Eastbourne*, *S. Durham*, *S. Oranienburg* and *S. Typhimurium*). A particular characteristic of *Salmonella* in chocolate and cocoa is its survival up to several years, and high heat resistance to heat treatment used in processing, which is due to the low a_w and fat. *Staphylococcus aureus* survives for several months in chocolate. Contaminated dried milk powder added to chocolate liquor after the heat treatment (cocoa bean roasting) can contribute *Salmonella* into finished milk chocolate. Outbreak of *Salmonella* Typhimurium can occur due to contamination from peanut butter and peanut butter paste. Because the peanut butter or paste can be used in the production of chocolate without a further inactivation step. Besides causing deteriorative alteration of sensorial properties, the presence of filamentous fungi in cocoa and chocolate can also cause the possibility of mycotoxin contamination. Molds, such as *Neosortorya glabra*, *Chrysosporium farinicola* and *Chrysosporium xerophilum*, can cause spoilage on chocolate and its products. The contamination of microorganisms with chocolate during processing can be prevented by good manufacturing practices. Mycotoxins are stable compounds in storage, and are resistant to chemical and physical treatments, so the best approach to limiting mycotoxin contamination is reduction of formation.

Keywords: Chocolate, Pathogens, spoilage

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Examination of Accessibility in Recreational Areas; Bursa City Sample

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Abstract

Due to the monotonous living conditions brought by the intense and irregular urbanization, recreational activities are important activities to keep one's life power and desire alive. For this reason, recreational activities and recreational areas increase the quality of life. Recreational areas that are able to respond to the vital needs of people are functional, one of the most important functions is to be accessible in addition to offering various activities. Within the scope of this criterion, accessibility of recreational areas play a major role in their choice. The purpose of the study is to examine the relation of transportation to recreation areas and recreational activities by highlighting the importance of transportation in recreation. The study was carried out in Bursa, one of the leading cities in Turkey, in terms of industry as well as natural, cultural and historical values with rich recreational possibilities. Within the scope of the study, the criteria of accessibility of recreation areas and recreational areas were examined in terms of their location, function, location, transportation characteristics, user characteristics. These criteria are determined by highlights such as density, regional accessibility, attraction center, connectivity of transport system, transportation management.

Keywords: Accessibility, Landscape, Recreation, Transportation system

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15-17 May 2017

The Importance of Global Warming in Turkey in Terms of Field Vegetables

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Abstract

Vegetables are highly sensitive to climate variability and extreme weather conditions. Climate setting the limits and orientating how the vegetable growing of a country will be done is also clearing in which types-varieties, when the vegetables will be produced and how their growing method will be. Shortly, it is the pro-planner of all our studies in field vegetable growing. Temperature, precipitation, the change of carbondioxide gas content in the atmosphere and extreme climate events have important impress on field vegetable growing. In this study; after the determination of the effects on field vegetable growing under the conditions of global warming, temperature, precipitation, carbondioxide gas changes in sowing and planting times, plant diseases and pests control and extreme climate events; findings and suggestions of micro and macro scope in order to attain the sustainability of field vegetable growing under these negative circumstances were presented according to the type of product, geographical region and vulnerability of global warming in Turkey. For another purpose, the effects of global warming in different sectors of agriculture should be voiced frequently for sustainability in agriculture.

Keywords: Global warming, field vegetable.

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The Impact of Global Warming on Agricultural Soils in Turkey

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Abstract

Global warming is one of the most important global environmental problems. The impact of global warming on agriculture must be assessed in a sustainable way. Soil is the most important issue in agricultural production. Temperatures below and above of the optimum soil temperature limit vegetative growth and agricultural production. Soil moisture is the most important factor in the nutrient intake of the plant. As the amount of water in the soil decreases, the intake of nutrients is restricted. Generally global warming shortens the freezing period in agricultural soils. Even the sowing and planting date is put forward in agriculture soils in cool climatic conditions. But in semi-arid and arid regions the soil is negatively affected by high temperature. And this leads to negativity in agricultural production. The aim of this study is to demonstrate how the global warming affects agricultural soils by supporting with the example of Turkey.

Keywords: Global warming, Agricultural soils.

Antimicrobial Activity and Comparison of Volatile Compounds Extracted by Microwave Assisted Distillation and Hydrodistillation of *Thamnobryum alopecurum* (Hedw.) Schimp. Grown in Turkey

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Abstract

Bryophytes are known to have been used in China, Europe and North America for more than 400 years to treat species to heal wounds. The Bryophytes studied under the plant kingdom are a large group of 25,000 taxa containing approximately 14,500 species. The biosynthetic components of the bryophytes, such as oligosaccharides, polysaccharides, sugar alcohols, amino acids, fatty acids, aliphatic compounds and phenylquinones, aromatic and phenolic substances, are defending against these organisms. Since the various bryophytes of Chinese and American residents have a good potential for medical use, the antimicrobial effects of bryophytes have begun to be investigated. Many studies about mosses in the literature are about determinations of mosses biological activity of solvent extracts and in a few studies, identify terpenoid compounds and essential oil composition. *Thamnobryum alopecurum* (Hedw.) Schimp. is the only species grown in Turkey. In this study, volatile oils of *Thamnobryum alopecurum* (Hedw.) Schimp. were obtained by hydrodistillation and microwave assisted distillation and analyzed by GC/MS and GC/FID. Essential oils extracted with two different ways are compared, in order to find the best methods for identifying much more compound from *Thamnobryum alopecurum* (Hedw.) Schimp. In the analysis by hydrodistillation, 44 compounds were found and 99.48% of the total was found. In the analysis with Mw, 35 components were found and 97.5% were elucidated. Also, in the two types of distillation, the main constituents are terpenes and terpenoids, which constitute 74.47% and 67.12% of the total composition, respectively. Isolated oils were tested to broth media by using double dilution and the minimal inhibition concentration (MIC) values ($\mu\text{g/mL}$) in respectively with eight microorganisms (*E. coli*, *Y. pseudotuberculosis*, *P. aeruginosa*, *S. aureus*, *E. faecalis*, *B. cereus*, *M. smegmatis* and *C. albicans*). Against all of them except for *P. aeruginosa* were found antibacterial activity with 482-697 $\mu\text{g/mL}$. Further, the essential oils of *Thamnobryum alopecurum* (Hedw.) Schimp showed moderate anti-tuberculosis activity (*Mycobacterium smegmatis*).

Keywords: *Thamnobryum alopecurum*, Hydrodistillation, Microwave, GC/MS, GC/FID, Antimicrobial activity.



Determining Some Agricultural Traits and Relationships among the Traits in *Helianthemum ledifolium* (L.) Miller var. *lasiocarpum* (Willk.)

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Abstract

This study was carried out some plant traits and relationships among traits in *Helianthemum ledifolium* (L.) Miller var. *lasiocarpum* (Willk.) Bornm. taxon naturally grown in a protected area of Dicle University Campus in 2015 and 2016. According to the two years average the examined traits were determined as following; plant height, 30.04 cm; number of main stems per plant 1.02, main stem diameter 1.24 mm, number of secondary branches 1.06, number of capsules per plant 4.22, capsule diameter 7.21 mm, number of seed per capsule 158.5, seed weight per capsule 0.065 g, 1000-seed weight 0.421 g, seed yield per plant 0.265 g and seed germination rate 50%. Results of the correlation analysis were performed to determine the relations between the examined traits revealed that highly significant and positive correlations were found between plant height and number of secondary branches per plant; number of capsules per plant and seed yield per plant; main stem diameter and diameter of capsule; number of secondary branches and capsule numbers per plant; seed numbers per capsule and seed yield per plant; capsule numbers per plant, seed numbers per capsule and seed yield per plant; seed numbers per capsule, seed weight per capsule and seed yield per plant. On the other hand; significant and negative correlations were found between main stem diameter, seed numbers per capsule; 1000 seeds weight and seed numbers per capsule.

Keywords: *Helianthemum ledifolium* var. *lasiocarpum*, agronomic traits, correlation

In vitro ovule culture of *Citrus* genotypes for evaluating embryogenic callus induction potential

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Abstract

Callus cultures of citrus have been exploited usefully in various ways like introgression of genes, genetic and epigenetic assessments, understanding transcriptional profiling, investigation of molecular mechanism of apomictic embryogenesis and several others. *Citrus* genotypes were manipulated *in vitro* for improvement. Ovules as explants from indigenous *Citrus* germplasm were cultured *in vitro* to determine their response towards embryogenic callus induction. The protocols were standardized for callus induction using salts and vitamins of MT with two combinations of growth regulators i.e. [2,4-D (100 μgL^{-1}) + BAP (100 μgL^{-1})] and [Malt Extract (0.5 gL^{-1}) + Kinetin (5 mgL^{-1})] called EBA and DOG respectively. The differential response, of the two media and genotypes under study were compared for *in vitro* callus induction. The induced calli were subsequently allowed to grow with frequent subcultures to evaluate the differences in regeneration potential. Responsiveness of ovules in medium EBA was significantly more than in DOG. The percentage of callus induction was found significantly higher (49%) in 'Valencia orange' when cultured in medium EBA while minimum (20%) was observed in 'Citrumelo-1452'. Color, morphology, quantity and growth habit of calli from each genotype was recorded at different levels. In general, more number of days to callus initiation and regeneration were observed in DOG than in EBA. Maximum days to callus initiation (67) were taken by 'Citrumelo-1452' while the minimum (41 and 39) were observed in 'Lemon' and 'Valencia orange' respectively. Likewise, more days to regeneration were taken in medium DOG as compared to EBA. 'Citrumelo-1452' took maximum number of days (84) to regeneration against the minimum (53) observed in 'Valencia orange'.

Keywords: *Citrus*, *in vitro*, callus induction, ovule culture, regeneration

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15-17 May 2017

The Effects of Vermicompost (Liquid form) on Tomato Growth and Yield

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Abstract

On recent years, human health and environmental security are under risk because of the global environmental pollution has increased. Intensive chemical fertilizer utilization has caused serious concerns on degradation of soil which is our natural source today and sustainability of agriculture by decreasing soil quality and disturbing natural balance. Being in available form and secure for human and environment health of especially macro plant nutrient elements (N, P and K) in vermicompost supports sustainable agricultural production in organic agriculture. The study was conducted according to random block design with 3 replications for 4 applications. The applications were Control (100% chemical fertilizers recommended for conventional growing), and liquid vermicomposts diluted in the rates of 10% 20%, 25% + 70% of chemical fertilizers applied in control application. Plant height, stem diameter, fruit length, fruit diameter, fruit weight, Brix and kg/da yield parameter were investigated within the study. Statistical analyses were performed with JMP software in 0.05 significance level. According to the results, there were no statistically significant positive differences between applications. The application of 10% liquid vermicompost+70% chemical application was found as optimal for recovery of 30% reduced chemical fertilizer. This application recovered the reducing chemical fertilizer when compared to 100% chemical fertilizer application and made differences with other applications in terms of plant height, stem diameter, fruit height, fruit diameter, fruit weight and yield (5,215 kg/da). According to the results, 10% liquid vermicompost application was concluded as optimal dosage to be used in determinate tomato growing.

Keywords: vermicompost, liquid form, tomato, yield, plant growth parameters

Cheeses Consumed by Frying or Grilling

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Abstract

Cheese, one of the important sources of nutrition, can be consumed directly or by frying. Cheese slices can be fried on a grill or pan or can be fried in oil after battered with covering materials such as eggs, flour. Hellim cheese is a type of semi-hard cheese typical of Cyprus, which is most known to be consumed by frying or grilling, and sheep milk is generally preferred in its production. Kefalotyri, another type of cheese, is a hard (65-70% dry matter) specific to Greece and is used in a hot starter called Saganaki. Leipäjuusto (Bread cheese), a Finnish product, is consumed by grilling or frying. Paneer is a fresh Indian cheese and resembles Hellim and is fried in a frying pan. Provolone, a hard and smoked cheese unique to Italy, is consumed by grilling or frying after battered. The Queso Panela is a Mexican semi-hard basket of cheese and is grilled. Circassian (Çerkez) cheese, in which various herbs are used in the production, and is consumed by grilling or frying in oil, is obtained by the same cheese frying application. The "village cheese" produced in the Mengen district of Bolu is consumed by being grilled or fried in oil. Kars Grapevine cheese, which is porous and hard, is fried in oil after being crushed in the shape of a cube. The frying keş is another kind of traditional cheese which is obtained in and around Bolu by straining and drying the yogurt and consumed by frying in a pan without oil. In addition, some cheeses produced by some companies under the name of "pans and grilled cheese" are also on the market. Besides, many cheeses such as Dil cheese, Emmental, kaşar and Mihaliç are fried after battered in oil with different covering materials. The tofu, which is a cheese that can be consumed by vegans, is paned with coriander, curry powder etc. and fried. Different aroma and flavor ingredients are released by grilling or frying process; the color and textural characteristics of the product also change positively. This change leads consumers to prefer products and increase their consumption.

Keywords: Cheese, Frying, Grilling, Batter



Determination of Biological Soil Quality Score in Sugar Beet Made Culture

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Abstract

Indicators of soil quality have been defined, from the ecological, economic, and social development standpoints; they usually take into consideration soil properties or associated crops that can be used in response to the dynamic changes in agroecosystems. Biological soil properties are critical indicators for soil quality. A study was carried out to investigate the soil biological properties as indicators of quality attributes. This study was conducted in the Konya province Çumra plain Alibey series at ten in number lands made sugar beet cultivate were determined biological properties and it was evaluated with regard for biological soil quality. Biological quality score values properties; organic carbon (OC), active carbon (AC), potentially mineralizable nitrogen (PMN) and root health assessment (RHS) were measured. The soil biological quality scores for each soil were calculated using Cornell Soil Health Assessment (CSHA) and Soil Management Assessment Framework (SMAF) scoring functions. Analyzed soils biological quality score values ranged from 34 to 65 by getting on the scale of 100.

Keywords: Çumra plain, biological properties, soil quality, sugar beet

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Vertical Farming: A Solution for Food Crises in Istanbul

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Abstract

Agricultural activities have served as an important source of economic livelihood as well as meeting people's basic food needs. In Turkey, recent legislation and regulations, the emergence of large-scale agricultural production enterprises, and the cost of the necessary equipment nearly eliminated small scale farming. Changes in global food policies and sectoral competitions cause farmers in rural areas to leave their lands and migrate to large cities, hoping to find better employment charm, education facilities and health services. In the 21st century cities, it is necessary to reconsider the city and agriculture, while urbanization is inevitable and increasing. The "food crisis", which today seems like an economic indicator, will be seen in the future in terms of accessibility though, especially when the urban population is rapidly growing. Many cities are unable to afford their own food for reasons such as the inadequacy of existing urban agricultural activities and the opening of agricultural land to construction. Lack of empty spaces on the horizontal plane for agriculture parallel to the disappearance of green and open spaces has led to new necessities of the consideration for different urban agriculture typologies in urban area, and landscape architecture can stand as a solution. This paper aims to discuss the potential of vertical farming to mitigate urban food crisis and to contribute the integration of unused spaces with urban green network. Regulations in historical process are examined, with the mapping of unused vertical spaces to understand the potential areas. Vertical farming is proposed for center of Besiktas with the re-use of empty public facades. As a conclusion, different building typologies can participate in existing ecological and green networks with vertical agriculture solutions, and can help providing the local food to neighborhoods, with less energy consumption but more environmental, social, and economic gain.

Keywords: Urban agriculture, vertical farming, food crisis, Istanbul, landscape architecture.

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Investigation of Enterotoxin, Exfoliative Toxin, Toxic Shock Syndrome Toxin genes in Coagulase Negative Staphylococci isolated from goat milk and milk products

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Abstract

Coagulase Negative Staphylococci (CNS) were accepting as important agents in udder health but were not accepting important agents in food safety. The aim of this study is investigating the presence of food sourced toxigenic CNC strains. This study was conducted to investigation of the prevalence of enterotoxin genes (*sea*, *seb*, *sec*, *sed*, and *see*), toxic shock syndrome toxin gene (*tst*), and exfoliative toxin genes (*eta* and *etb*) in CNS isolated from goat milk and milk products. For this purpose, a total of 62 CNS isolates were used for analyses. For the detection of genes two set multiplex PCR were applied. In the result of multiplex PCR analyses, *see* gene were detected 6 (%9,67), *sed* gene 1 (%1,61) and *tst* gene 7 (%11,29) of isolates, however *sea*, *seb*, *sec*, *eta* and *etb* genes were not detected of these isolates. In this study, the isolation of toxigenic CNS from goat tank milk and cheese suggests that the investigation of CNS isolates and toxins in food is remarkable and important in terms of food safety and public health, and suggests that further and repeated studies on the subject should continue. These toxin produced strains may have potential risk for human health.

Keywords; Goat milk, goat cheese, CNS, toxin genes,



Chemical and histological examination of fermented sausages for sale in Hatay

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Abstract

The aim of this study was to examine the fermented sausages (23 samples) including products of small scale enterprises (17 samples, Group I) in Hatay region and different known brands (6 samples, Group II) by terms of chemical and histological conformity to standards. Chemical analyzes were made and evaluated according to TSE standards. Two samples from Group I were found to be high with pH 5,59 and 6,19 and 15 samples were found between pH 4,71-5,39 and Group II pH 4,67-5,27. Moisture levels in the chemical analyzes were found to be higher in the Group I than in the Group 3 (40%), others (12.34% -36.04%), Group II (22.07% -36.29% 37,94%, Group II was found between 22,48% - 30,67%. Histological analyzes were carried out by using Crossman's modified triple staining method of paraffin section. According to the Turkish Food Codex Meat and Meat Products Communiqué, in Group I, 8 samples of 17 sucuk samples were found to be histologically compatible and 9 samples contained offal and cartilage-bone. It was determined that 1 of 6 samples of sausage belonging to Group II contained giblets and 5 of them were in compliance with the standards. As a result of chemical and histological examination of the samples which are sold as fermented sausage, a great variety of humidity was determined especially in Group I. Nine samples out of 17 in Group I and one sample out of 6 in Group II were concluded to be in scope of imitation and adulteration histologically in terms of related regulations.

Keywords: Fermented sausage, histological quality, chemical quality

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Evaluation of Some Wheat Cultivars as Roughage

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Abstract

This study was carried out during the growing season of 2015-2015 to determine the roughage value of some wheat cultivars. In the study, 3 bread wheat (Pehlivan, Aras, Cham-6) and 5 durum wheat (Eminbey, Bakrajo-1, Ovanto, Simito and Acsad-65) cultivars were used as plant material. Experiments were conducted in randomized complete blocks design with three replications. Plant height, green herbage yield, dry herbage yield, crude protein ratio, protein yield, acid detergent fiber, neutral detergent fiber, calcium, magnesium, phosphor and potassium ratios were investigated. Plant heights between 70.3 and 81.8 cm, green herbage yields between 694.0 and 2560.0 kg/da, dry herbage yields between 237.4 and 824.9 kg/da, crude protein ratios between 10.60 and 12.85%, protein yields between 39.3 and 98.5 kg/da, acid detergent fiber ratios between 31.02 and 34.48%, neutral detergent fiber ratios between 51.86 and 54.54%, calcium ratios between 0.36 and 0.47%, magnesium ratios between 0.11 and 0.17%, phosphor ratios between 0.35 and 0.38% and potassium ratios between 1.61 and 2.22% have changed. In the study, Aras and Acsad-65 cultivars for high green herbage, dry herbage and protein yields; Simito and Bakrajo-1 cultivars for low acid detergent fiber, neutral detergent fiber ratios and high calcium and magnesium contents were better results as roughage at wheat cultivars.

Keywords: Wheat, herbage yield, nutrient content, ADF, NDF

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Pistachio Production in Turkey and the Contributions of Siirt Province

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Abstract

With 120 tones production pistachio, Turkey is in the 3th place in the world. Our production amount is not sufficient level for the country. Iran is in the first place and ABD is in the 2th place in the world for pistachio production. Because both pistachios growing are made in irrigated conditions, Yield is high. Pistachio production of Turkey is in dry conditions, limy and stony land. Because of these reasons production is inadequate, yield is low. The 95% of Turkey pistachio production is in the Southeastern Anatolia Region. 90% of growing pistachio consists of Uzun variety and 10% of it consists of Siirt variety. Made Pistachio rootstock-variety experiments in dry and irrigated conditions, Siirt variety grafted on *Pistacia khinjuk* (Buttum) showed best performance. In irrigated or in dry conditions, Siirt variety is the best variety. Studies and Incentives should be increased for this variety production amount. *P. khinjuk* rootstock grows also in Siirt province and have more superior characteristics than other rootstocks. It should be recommend to be used this rootstock in new established orchards. The most important problems of pistachio production are irrigation, pollination, training. Almost all existing orchards are grown in dry condition. By forcing irrigation facilities, orchards should be irrigated. While Yield in hectare is 1200 kg dry pistachio in dry condition, it is 3200 kg dry pistachio in irrigated condition (Atli et all, 2011). Pistachio producers refrain from the use of pollinator variety in their orchards. Thanks to made studies, pollinator varieties were determined (Atli et all, 2005). If suitable pollinators are used for the varieties, fertilization problem will be solved. In generally, Goble training systems are applied in Pistachio trees. Because this training system is not suitable. It is necessary to pass to the modified leader training system which is suitable for the region.

Keywords : Pistachio, Production, Siirt, Yield

Condition of Almond Growing in Turkey, New Developments and Suggestions

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Abstract

Turkey's average production of almond for the last 4 years is 76,000 tones. Turkey is in the 8th place among in the almond producing countries. ABD is in the first place and production of almond in irrigated conditions, but Turkey are usually producing almond in dry conditions. In our country, Almond growing was done as hedge plants on the borderline of the orchard before 1930. As fruit plantation almond growing is increasing by day by. Almond Growing have not still become modern growing. The most important problems in the almond growing can be sort out not to be used standard rootstock and variety, lack of the irrigation and not to be used suitable training system. In last years, Development of nursery industry, thanks to government support of certified saplings, orchards are established with standard rootstock and varieties. Our old varieties can not race with breded varieties in Spain and ABD in terms of yield and quality. Abroad varieties are late flowering, more productive and high quality varieties. Clonal almond rootstocks imported from abroad are used as almond rootstock. In recent years, breeding almond rootstock and varieties have risen in our country. With cross-breeding, Late flowering, productive and high quality hybrids types were obtained (Acar et al, 2014). Registered name of “Halit Bey” and “Bozkurt” varieties which are latter flowering and high quality than varieties of ABD (Nonpareil and Texas) were breded in another study (Atli and Bozkurt, 2016). With clonal almond rootstocks which resist to nematode breeding studies, 4 clonal almond rootstocks were developed (Atli et al, 2015). As it were understood that Almond would be a strategic product in our country, modern growing methods are applied in newly established orchards. If the studies continue like this, In the next decade, Turkey will rank higher levels in almond production.

Keywords : Almond, Production, Quality, Yield



The Effects of Cadmium and Copper Toxicity on kidney Tissue of *Oreochromis niloticus*

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Abstract

In this study, cadmium and copper accumulation in kidney tissue of *Oreochromis niloticus* were determined by spectrophotometric method (ICP-MS). The effects of cadmium and copper mixtures (1.0 mg/L Cu+1.0 mg/L Pb) exposure in the study were examined in *O. niloticus* kidney tissue at 3 and 7 days. Compared to the control group, the kidney tissue of *O. niloticus* is increased accumulation of cadmium in the environment effect in the presence of cadmium and copper. The most increase in medium conditions at the end of 3 and 7 days in compared to control fish. But, copper accumulation in kidney tissue is not like cadmium. This accumulation is less than cadmium accumulation. As a result, the kidney tissue is an important target tissue for cadmium uptake.

Keywords: *Oreochromis niloticus*, Cadmium, Copper, Accumulation, Kidney tissue

The Examination of Forest Fires Through Different Classification Algorithms and Silvicultural Measures To Be Taken for Fire Prevention

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Abstract

In this research study, the relationship between the KBDI, SPEI and FWI components and the amount of burned area and the number of fires in the Antalya region between 2001-2014 was examined through 4 different classification algorithms (kNN, SVM, RPART, RF). Besides having the greatest forest area, 1 146 062 ha, after the Regional Directorate of Forestry in Amasya, the Antalya region as the study area stands out since it is an area where fire forests 2.72 times more than the average number in Turkey occur. Also, it is a fire risk-increasing factor that the vegetation cover in this area is mainly of Calabrian pine (*Pinus brutia* Ten.) and maquis elements. Currently, various fire and drought indices (e.g. KBDI, FWI and SPEI) is commonly used in determining the fire risks. In this regard, in the study area, four algorithms were used in predicting the amount of burned area via fire and drought indices and a success of 30-39% was achieved at varying rates. Varying rates, 8-41%, were achieved in predicting the number of fires. These algorithms had more successful results in identifying the possibilities of burning of the areas greater and smaller 300 ha. The prediction rates were obtained as 99.30% for kNN, 99.30% for SVM, 99.58% for RPART, 99.53% for RF. Moreover, the forest organizations being of high fire risks in the study area were also examined in terms of silvicultural measures. Coniferous monocultures should be mixed with less flammable broad leaved species. In the pure or mixed Calabrian pine forests, timely and technically appropriate thinnings should be made and the amount of burning materials should be minimized lighting up inside the stand.

Keywords: classification algorithm, forest fire index, drought index, silviculture, thinning.

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Potential of Betung Bamboo (*Dendrocalamus asper*)'s Fiber for Anti-Bacterial Bathroom Buddies as Fiber-Based Prospective Product in Bali, Indonesia

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Abstract

Bamboo is a plant that grows very fast and most commonly found grass on earth, especially in Indonesia. Bamboos are indeed inseparable from the lives of those people in the tropics. For example in Bali, Bamboo is often used by Balinese people in everyday life as a traditional building material and in some religious ceremonies. However, utilization of bamboo as a prospective product in Bali is still very low. Bamboo contains many chemical substances, for example methanol and penny quinone, that are beneficial as an anti-bacterial agent to prevent any bacterial growth. Bamboo also has a thick cell wall, so that the tensile strength of bamboo's fiber is relatively high and it can be used as a fiber-based prospective product as shower pouf and cleaning mitten to clean your body. Bamboo's fibers manufacture in four stages. First is preparatory stage that includes preparation of the raw material (Bamboo's stem) and liquid chemical (NaOH 10%). Second is softening stage that make bamboo's texture tender by soaking bamboo's stem in softening solution (NaOH 10%). Then, it's continued by rinsing stage to clean the bamboo. Last stage is separating the fiber of the bamboo to obtain the desired fibers. After that, apply the bamboo fiber to produce shower pouf and cleaning mitten. This species of Betung Bamboo or *Dendrocalamus asper* is easily found in Bali and there is no need using fertilizer or pesticides during its cultivation because it grows wild. Furthermore, this study was conducted to optimize the advantage of bamboo's fiber which has an anti-bacterial agents, by making some products (shower pouf and cleaning mitten) that are more effective in killing germs because the touch intensity with skin is longer than other products.

Keywords: Bamboo, fiber, Bali, antibacterial, shower pouf, cleaning mitten

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Crop Production Potential of Aydın Province

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Abstract

The province of Aydın is located at the Büyük Menderes basin in the West of Aegean Region. The neighbors of Aydın are İzmir, Manisa, Denizli, Muğla and Aegean Sea. Aydın province is suitable for polyculture agriculture with its soil, climate, topographic structure and ecological characteristics. In this study, the current situation of Aydın, with regards to crop production, problems and solution proposals have been reviewed. For this purpose, planting areas and production values of Aydın between 2011- 2015 years have been acquired from the Turkish Statistical Institute data. Aydın's total area is 800.700 hectares, and it covers 46 % (368.336 hectares) of agricultural area, 39.2 % (313.632 hectares) of forest, 3.1 % (25.242 hectares) of grassland, 1.9 % (14.950 hectares) of lake-swamp and 9.8 % (7.854 hectares) of non-agricultural areas. The agricultural areas, while 59 % (216.657 hectares) has been allocated for fruit growing, 37 % (136.145 hectares) for field crop cultivation, 3 % (11.595 hectares) for vegetable growing, 1 % (3.929 hectares) has been allocated for fallow area. Most of the wheat of cereal (75.087 tonnes); cotton from industrial crops (287.473 tonnes); fig (186.124 tonnes), chestnut (21.215 tonnes), olive (297.240 tonnes), strawberry (60.883 tonnes) from fruits; tomato (149.977 tonnes), pepper (27.951 tonnes), artichoke (5.990 tonnes), okra (2.3.202 tonnes) from vegetables and clover from forage crops (708.194 tonnes) are produced in Aydın. In Turkey, 61.9 % of the total fig, 33.3 % of the total chestnut, 18.3 % of the total artichoke, 17.5 % of the total olive, 16.2 % of the total strawberry, 14 % of the total cotton, 7.6 % of the total okra and 5 % of the total clover amount is being produced in Aydın. In addition, the greenhouse area of Aydın is 1.378 hectares, and it constitutes 20 % of our country's greenhouse areas.

Keywords: Crop production, Planting area, Agriculture, Aydın

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Comfort Level Analysis of Pedestrian Zone in Nişantaşı District İstanbul

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Abstract

Rapidly increasing world population is increasingly concentrated in the urban areas. Comfort level with the city's public spaces in crowded city's character as to affect the users' quality of life and health has a significant impact. Therefore, make improvements to the streets in cities where deemed necessary and appropriate by analyzing the comfort level of the street interventions in cities and city dwellers are more comfortable environment, will provide a healthy and peaceful way of life. Intensive construction in İstanbul, increase in population and motor vehicle causes the formation of uncomfortable environment for the city. In this study, İstanbul's daily pedestrian and the heavy vehicle flows , trade , housing, hosting a variety of functions such as education, history with a history of Nisantasi district Teşvikiye and Rumeli Streets in Şişli, expand the pedestrian comfort level and the compliance with the standards established suitability / unsuitability of to reveal is intended . For this purpose Teşvikiye and Rumeli Streets were analyzed from the qualitative and quantitative aspects. Weekdays and weekends in the study area has been demonstrated in different points of the vehicle and pedestrian density counts, according the equipment in the proper/ improper use of designated building types, floor height, and their effects on the level of comfort for pedestrians processed all of them on the map floor use has tried to present. Doing this study is required to crowded and become increasingly uncomfortable cities like İstanbul. Developed methodology for crowded urban spaces is a universal necessity to plan accordingly.

Keywords: Comfort Level, Pedestrian Zone, Density of Use, Public Space, Urban Space

Pesticides Used in Agricultural Production in Aydın Province

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Abstract

Aydın is a city where agricultural production is intensively carried out, the population is constantly increasing and consequently food consumption tends to increase day by day. The intensity of modern agricultural practices has led to widespread use and development of pesticides. However, most of the pesticides contain toxic chemicals both in terms of environment and human. Therefore, pesticides are found in water, air and soil environments and affect living conditions of living things negatively. In the study, it was aimed to determine the amounts of pesticides used in crop production in Aydın province between 2010-2014 years. For this purpose, pesticide consumption amounts in Aydın between 2010 and 2014 years were obtained from the data of Turkish Statistical Institute. In 2010, a total of 768 tons of pesticide, including 495 tons of insecticide, 129 tons of fungicide, 103 tons of herbicide, 38 tons of acaricide and 3 tons of other pesticide were used; In 2014, a total of 1.304 tons of pesticide, 495 tons of insecticide, 440 tons of herbicide, 136 tons of acaricide, 132 tons of fungicide and 101 tons of other pesticide were used in Aydın province. When consumption is examined according to pesticide classes; Insecticide consumption decreased by 0.02 % (1 tons), while other pesticide consumption increased by 97 % (98 tons), herbicide consumption by 76.5 % (337 tons), acaricide consumption by 72.1 % (98 tons), fungicide consumption by 1.8 % (3 tons) and total consumption by 41.1 % (536 tons). As a result, producers in Aydın province, which has a polycultural agriculture and a high agricultural potential should be informed about pesticide use and alternative control methods.

Keywords: Pesticide, Chemical control, Toxic chemicals, Aydın

The Role of Extracellular DNA in Biofilm Formation

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Abstract

Biofilm structures of microorganisms formed by attaching to a surface or substrate are the most resistant microbial life form known today. Thanks to this structure, which is built by almost every bacterium to protect itself from environmental factors, bacteria protect themselves against externally applied disinfectants, antibiotics and radiation. In biofilm formation, there are many polymers released by the bacteria outside the cell. One of these polymers is extracellular DNA (eDNA). eDNA not only usually occur from genomic DNA fragments of the bacteria which have been lysed, but it can also occur outside of the cell during horizontal gene transfer. As a nucleic acid, DNA provides the flow of genetic information with other cells in the matrix, and attach the cells to each other and those cells to surface in the biofilm. In addition, its biochemical structure can increase the biofilm resistance to antimicrobial agents applied. Today, the importance of extracellular DNA in the biofilm structure is known. Now, as we know the structural and functional roles of eDNA in the biofilm structure; it has become a new target to fight against biofilms. In many studies in the literature, degradation of biofilms is aimed by destroying the structure of DNA thanks to the endonucleases applied by targeting eDNA. Promising results have been obtained in recent studies and many research groups continue their research on extracellular DNA.

Keywords: Biofilm, Extracellular DNA, Endonucleases

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New Strategies in The Control of Biofilm Composition

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Abstract

Biofilms are multimicrobial assemblages embedded in polymeric matrix synthesized by microorganisms attached to biotic and abiotic surfaces. This matrix is composed of various biopolymers known as extracellular polymeric components. Extracellular polymeric constituents are nucleic acids, carbohydrates, proteins and lipids and these build the basic architectural structure of biofilms and support the vesicle colonies. This structure also protect biofilm bacteria from biofilm sanitation agents, antibiotics and physical interventions. These biopolymers perform many tasks, such as adhering cells to each other or causing a bacterial infection. 80% of microbial biomass in the world is composed of bacteria in biofilm structure. This lifestyle is the predominant one in the bacterial milieu. Biofilm-based bacteria are 1000 times more resistant to environmental stressors and disinfectants than planktonic cells, thus it limits the usage of traditional sanitation and disinfection methods. Since biofilms cause major problems in health and food industry, it is necessary to develop innovative and effective strategies to fight against them. Several strategies have been carried out on the control of biofilm and biofilm-related infections through various disciplines. These strategies are focused on; coating surfaces on which the biofilm structure will form with antaggregant and antimicrobial agents, limiting cell adhesion by using bacteriocins, reducing biofilm stability via using mutant bacteriophages as antibiofilm agents to degrade extracellular polymeric substances or glycocalyx, weakening biofilm structure by using certain enzymes that disrupt biopolymers, inhibiting mature biofilm structures with the help of aromatic plant extracts and the resistance mechanisms via quorum-sensing and quorum queching molecules.

Keywords: Biofilm, Antimicrobials, Innovations, Biofilm control

Effects of IBA on the Rooting Ability of Softwood Myrtle**(*Myrtus communis* L.) Cuttings****Neslihan ATAR^{1*} Ercan OKTAN¹ Ali Ömer ÜÇLER¹ Zafer YÜCESAN¹**¹KTÜ Faculty of Forestry, Forest Engineering Department of Silviculture*Corresponding Author: [*atarnesli@gmail.com](mailto:atarnesli@gmail.com)**Abstract**

In this study, effects of IBA on the rooting ability of softwood Myrtle (*Myrtus communis* L.) cuttings were investigated. Myrtle is used in arid and semi-arid habitats for stabilization of the erosion, medicinal and aromatic plant and in landscape workings. 120 softwood cuttings were used in the study. Total numbers of cuttings were separated into 4 groups and different concentrations of IBA were applied to 30 cuttings in each group. In rooting experiments 1000, 2000 and 3000 ppm concentrations of powder form IBA were used. By the way, effective doses have been tried to exert an influence on the properties of promoting root formation, number of roots and improving quality. Cuttings, which are treated with hormones, stitched on sowing brick with perlite which are similar in terms of moisture, temperature and light properties. Obtained results showed that better rooting ability in softwood Myrtle cuttings was realized by using 1000 ppm concentration of IBA. While rooting level was 57% in cuttings treated with 1000 ppm IBA, the value was 43% in cuttings treated with 2000 ppm IBA, 50% in cuttings treated with 3000 ppm IBA and 53% in control cuttings.

Keywords: Myrtle, *Myrtus communis*, softwood cutting, rooting, IBA

Soil Carbon Dioxide-Carbon (CO₂-C) Flux in Vineyards

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Abstract

Soil respiration is a key component of the terrestrial ecosystems and carbon budget. Increasing atmospheric CO₂-C has need a strong for data and information terrestrial carbon cycle in terrestrial ecosystems. In this study, carbon dioxide – carbon (CO₂-C) flux in soil was investigated in vineyards in Sanliurfa – Harran Plain, Southeast Turkey. Soil CO₂-C flux was measured weekly vineyard from 2014 to 2015, using the soda – lime technique. Mean weekly soil CO₂-C flux ranged 4.95-20.98 g C m⁻² week⁻¹. Mean weekly soil temperature and soil moisture were determined 5.81-21.24 °C and 5.65-40.88%, respectively. Soil CO₂-C flux were related to soil temperature and soil moisture changes. Mean soil CO₂-C flux correlated strongly with soil moisture (r= -0.471; p<0.05). Mean weekly of soil temperature was correlated strongly mean soil CO₂-C flux (r= 0.504; p<0.05). Between soil temperature and soil moisture were fond correlated strongly (r= -0.882; p<0.05).

Key word: Vineyard, soil carbon, soil moisture, soil temperature

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Entomopathogenic Nematodes as Bio-control Agents in Agriculture

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Abstract

In terms of crop protection, although there are many different control options against pests, the biological control is highly preferred over other methods, because of safe to human, animal and environment, maintaining the ecological balance and sustainability. In addition, after 1980's alternative methods including biological control have gained importance with developing production systems such as Good Agricultural Practices and Organic Farming. As bio-control agents, entomopathogenic nematodes (EPNs) attract attention increasingly in research area recently. Their ideal properties such as the broad host spectrum, to be able to kill their hosts within 24-48 hours, to be producible commercially easily in vivo or in vitro, having ability to search actively their hosts, settling in application areas and staying effective for a long time, having easy applicability, being in compliance with many chemicals and being safe for the environment are important for their preferability. Entomopathogenic nematodes are very important in biological control of insects living in the soil such as the mole-crickets, the May beetles, wire worms and capnodis (woodborers). Nematodes are also successfully used against insects spending a portion of their life in the soil or on the soil surface in cryptic habitats. Entomopathogenic nematodes are widely spreaded in soils across the world. Currently, there are over 62 species belonging *Steinernema*, one species belonging *Neosteinernema*, and 16 species belonging *Heterorhabditis*. Six steinernematid and three heterorhabditid species have been identified in Turkey. Nowadays, researchers have continued to find new and more *efficacious* EPNs in an effort to meet the commercial application demands. Endemic EPNs are especially prioritized because they fit better to regional habitats. Releasing endemic EPNs also mitigate the concerns of those who believe foreign EPNs may affect non-target organisms and replace endemic species.

Keywords: Biyo-control, entomopathogenic nematodes, crop protection, agricultural pests

Detection and Preliminary Characterization of Bacteriocins Produced by Lactic Acid Bacteria Isolated from Ezine Cheese

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Abstract

A great number of Gram (+) and Gram negative (-) bacteria produce antimicrobial peptides, called bacteriocins, during their growth. Bacteriocins have been applied as a natural preservatives in the food industry for a long time due to their natural barrier against pathogens and food spoilage. Among the Gram positive (+) bacteria, lactic acid bacteria (LAB) have gained particular attention due to the production of bacteriocins. The use of LAB and of their metabolic products is generally considered as safe (GRAS). In this study, 24 isolates giving inhibition zones (>5 mm) against indicator strains (*Lactobacillus sake* NCDO2714, *Lactococcus lactis* SIK83 ve *Enterococcus faecalis*) were isolated from Ezine Cheese and were identified as *Enterococcus faecium* (11), *Lactobacillus paracasei* (6), *Enterococcus faecalis* (2), *Weissella cibaria* (2), *Lactobacillus plantarum* (1), *Lactococcus lactis* spp. *lactis* (1) and *Enterococcus lactis* (1) by performing 16S rDNA sequence analysis. The antimicrobial activity of bacterial isolates was tested by both agar overlay and well diffusion assays. 25 percent of these isolates showed antimicrobial activity several closely related microorganisms or enteric gram-negatives used as indicator. *Enterococcus lactis* 74 PMD10 in particular produced a bacteriocin with high activity (1600 AU mL⁻¹) and wide range of antimicrobial activity including *Staphylococcus aureus* ATCC 6538, *Listeria monocytogenes* and *Escherichia coli* ATCC 25922. Protease sensitivity assay demonstrated that the antimicrobial substance produced by 74 PMD10 was a bacteriocinlike substance since its inhibitory activity was completely lost by treatment with enzyme proteinase K and α -chymotrypsin. The activity was not affected by trypsin, lipase, α -amylase, catalase and lysozyme.

Keywords: Bacteriocin, Lactic Acid Bacteria, Antimicrobial Activity, Natural Preservatives

Detection of Bacterial Biogenic-amine in Foods by Molecular Methods

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Abstract

Biogenicamines (BA) are basic nitrogenous compounds which are formed by the action of living organisms including microorganisms. BAs are the low molecular-weight molecules with aliphatic (putrescine, cadaverine, spermine, spermidine), aromatic (tyramine, phenylethylamine) or heterocyclic (histamine, tryptamine) structure compounds formed mainly by decarboxylation of aminoacids or by amination and transamination of aldehydes and ketones. BAs are frequently found in high concentrations in fermented foods and alcoholic beverages. The formation and amounts of BAs in foods depends on the nature of the food, availability of free aminoacids, presence of the microorganisms with aminoacid decarboxylase enzyme and the effective factors on microbial growth. Although some BAs such as putrescine, cadaverine, spermine and spermidine possess importance for living cells, high consumption of BAs may cause food intoxication. Detection of BAs level in foods is important for the determination of possible toxicological effects and may also be considered as quality indicators in some foods. The microorganisms prevalent for formation of BAs in foods are *Bacillus*, *Clostridium*, *Pseudomonas*, *Photobacterium*, *Citrobacter*, *Klebsiella*, *Escherichia*, *proteus*, *Salmonella*, *Shigella*, *Micrococcaceae*, *Staphylococcus*, *Micrococcus*, *Kocuria*, *Lactobacillus*, *Enterococcus*, *Carnobacterium*, *Pediococcus*, *Lactococcus*, *Leuconostoc*. Several methods have been developed for the detection of BA-producer bacteria such as conventional culture techniques or different chromatographic techniques. The lack of speed, low sensitivity, false positive/negative results and requirements for equipments and costs are the limiting factors of the conventional culture techniques and chromatographic techniques, respectively. Molecular methods for the early and rapid detection of these producer bacteria are becoming an alternative to traditional methods. The techniques based on PCR and DNA hybridization determine the tyramine (*tyrdc*), tyrosine (*tdc*) and histidine decarboxylase genes. These methods offer the advantages of speed, sensitivity and specific detection of BA-producers. Early detection of potential BA-producers in foods before the amine is produced is crucial for the evaluation of the risks and critical control points.

Keywords: Biogenicamines, aminoacid decarboxylase enzyme, qPCR, DNA hybridization

Determination of Heavy Metal Concentrations (Cd, Cr, Fe and Zn) in Some Vegetables and Soils in Nevşehir, Turkey

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Abstract

The aim of this study is; determination of the levels of heavy metals contamination (cadmium, chromium iron and zinc) in the leaves of *Lycopersicon esculentum* Mill., *Capsicum annuum* L., *Allium cepa* L. and *Phaseolus vulgaris* L. plants grown in the province of Nevşehir during the 2012-2013 vegetation period. Soil and plant samples were taken from 4 different agriculture areas which were irrigated with different water sources. Heavy metal levels in the collected samples were determined by ICP-OES. As a result of measurements, the highest and lowest values were as follows: Cd (0.0001-0.037 $\mu\text{g g}^{-1}$), Cr (0.0003 -0.2420 $\mu\text{g g}^{-1}$), Fe (0.0193-129,87 $\mu\text{g g}^{-1}$) and Zn (0.001-4.74 $\mu\text{g g}^{-1}$). The heavy metal pollution detected in the watered plants samples from Kızılırmak is the highest level compared to the metal accumulation in the plant samples taken from other stations. The lowest metal concentrations in the plants were found to be collected from control points. The relative abundance of metals in vegetables was analyzed here followed by the sequence as Fe> Zn> Cr> Cd.

Keywords: Heavy metals, vegetables, ICP-OES, Nevşehir, Turkey.

Investigation of Effect of *Esp* Gene on Biofilm Formation Of *Enterococcus Faecalis* And *Enterococcus Faecium* Strains

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Abstract

Biofilm formation is a dynamic process involving the attachment of bacteria to a biotic or abiotic surface and encased in a hydrated matrix of exopolymeric substances. Enterococci have become increasingly important as nosocomial infections and found to form biofilms on several medical devices implanted in patients, such as central venous catheters, urinary catheters etc. The aim of this study is to elucidate the genetic nature of the biofilm production capability of the *Enterococcus* genus. Biofilm formation capacity is restricted to strains harboring the *esp* gene; and Esp advances essential connection of and biofilm formation by *E. faecalis* on abiotic surfaces. In this study, the presence of the *esp* gene has been investigated in terms of the presence of *Enterococcus* genus, and role of the *esp* gene in biofilm production may differ depending on the bacterial genus and various environmental conditions. To investigate the presence of *esp* gene in isolates, DNA samples purified from *Enterococcus* isolates were used as a template and PCR was performed with *esp* specific primers. In order to determine the role of *esp* gene in the biofilm production, the N-terminal region of the gene, amplified by site-specific primers were cloned into the pBAD24 vector. Following DNA sequence analysis, plasmid transformed into the *Salmonella* Typhimurium LT2 strain. Microdilution plaque analysis was performed with the aim of investigating whether the *esp* gene had an effect on biofilm production of the *S. Typhimurium* LT2 strain. For the first time in the literature, Esp has been transplanted into a Gram negative bacterial strain. Given the possibilities of encountering in its natural environment, transfer of the *esp* gene between the genera by horizontal gene transfer will result in increased biofilm-related infections due to strains with biofilm production capability.

Keywords: Enterococci, Biofilm, *esp* gene

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Studies of Energy Use Efficiency on Fruit Production

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Abstract

Studies related to energy use efficiency in Turkey and the world are one of the most important indicators for determining energy efficiency in agricultural production. In this study, previous studies related to the energy use efficiency of agricultural production in fruit areas in Turkey and the world have been included. Studies related to fruit production have been assorted and then the calculations of the indicators of energy input, energy output, energy use efficiency, energy productivity, specific energy and net energy, used to determine energy use efficiency in production areas, have been placed into tables. According to the study results, among energy inputs in fruit production chemical fertilizer consumption and fuel consumption are the most commonly used inputs. Summarized and tabulated as such, these indicators will serve as a collective resource for comparison and assessment purposes during studies to be conducted on energy use efficiency in fruit production.

Keywords: Fruit production, Energy use efficiency, Energy productivity, Specific energy

Studies of Energy Use Efficiency on Field Crops Production

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Abstract

In this study, previous studies related to the energy use efficiency of agricultural production in field crops in Turkey and the world have been included. Studies related to field crops have been assorted and then the calculations of the indicators of energy input, energy output, energy use efficiency, energy productivity, specific energy and net energy, used to determine energy use efficiency in production areas, have been placed into tables. According to the study results, among energy inputs in field crop production chemical fertilizer consumption and fuel consumption are the most commonly used inputs followed by human labour, seed inputs depending on the type of production. Summarized and tabulated as such, these indicators will serve as a collective resource for comparison and assessment purposes during studies to be conducted on energy use efficiency in field crops.

Keywords: Field crops, Energy use efficiency, Energy productivity, Specific energy

Impact of Nitrogen Fertilization Doses on Grain Yield and its Components in Barley Varieties

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Abstract

The effect of agronomic applications and environmental factors on grain yield and its components are very important and complicated in barley. Therefore, grain yield and its components highly have been influenced by agronomic applications and environmental factors. On the other hand; the nitrogen application has been effect to quality of barley. That is why; the research was designed to assess the effects of different nitrogen fertilization levels (0, 10, 20, 30 and 40 kg ha⁻¹ of N) on the agronomic performance of five barley cultivars in two growing seasons. Split plot layout within randomized complete block design with 3 replications was used in both years. Combined analysis of variance of nitrogen applications of five cultivars showed highly significant ($p < 0.01$) difference between the cultivars, nitrogen applications and interaction. There were genetic variability among cultivars on grain yield and yield components in response to nitrogen fertilization. The results showed that biggest increases on yield and yield components were observed in 40 kg/ha⁻¹ nitrogen fertilization level, while thousand grain weight was the biggest under without nitrogen application. The higher performance of yield and yield components was associated with higher nitrogen fertilization in regression analysis. The results of the this study has been recommended that it should be use and study higher nitrogen application levels than 40 kg ha⁻¹ of N in the next barley studied.

Keywords: Nitrogen, yield, components, Barley, regression.

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Temiz Kalkınma Mekanizması

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Özet

Kyoto Protokolü çerçevesinde sanayileşmiş 38 ülke, 2008-2012 döneminde sera gazı emisyonlarını 1990 seviyesinin yaklaşık %5 altına çekmeyi taahhüt etmiştir. 2005 yılında protokolün kabulüyle, alınan bu karar da bağlayıcı hale gelmiştir. Kyoto protokolünü uluslararası diğer çevre sözleşmelerinden farklı kılan özelliklerinden birisi de tanımlanmış olan esneklik mekanizmalarıdır. Maliyet açısından uygun uygulamaların teşvik edilmesi amacıyla üç araç geliştirilmiştir. Kyoto mekanizmaları olarak da bilinen üç esneklik mekanizması: Ortak Yürütme, Temiz Kalkınma Mekanizması (CDM) ve Salım/Emisyon Ticaretidir. Bu mekanizmalardan ortak yürütme ve temiz kalkınma mekanizmaları karbon piyasasını besleyen proje tabanlı iken, salım/emisyon ticareti ise bütünüyle piyasa tabanlı bir araçtır. Proje bazlı işlemler, çeşitli karbon azaltım projeleri çerçevesinde yapılmaktadır. Bu kapsamda, şirketler ya da hükümetler, uluslararası emisyon azaltma projelerinden kredi alarak, CDM ve Ortak Uygulama araçlarıyla kendi ülke sınırları içinde kullanabilmektedir. Teknoloji transferini teşvik eden, iklim değişikliğinin azaltılması çabalarında önemli bir paya sahip ve yenilikçi bir araç olan CDM, küresel ısınmaya karşı karbon ticaretinin hızla gelişen bir parçasıdır. Öne çıkan amaçları, yatırım alan ülkelerde sürdürülebilir kalkınmaya yardımcı olmak ve Ek-1 ülkelerinin emisyon azaltım hedeflerini uygun maliyetli yollarla gerçekleştirmelerine yardımcı olmaktır. Bu çalışmada üçlü esneklik mekanizması araçlarından biri olan CDM'nin gelişimi, amaçları, CDM projelerinin yapısı, işleyişi ele alınmıştır. Çalışmada ayrıca, kırsal kalkınma açısından CDM'nin önemi ve etkinliği, kırsal kalkınma ve enerji başlığı altında irdelenerek konuya ilişkin değerlendirme ve önerilere yer verilmiştir.

Anahtar kelimeler: İklim değişikliği, Kyoto, kırsal kalkınma, enerji

Partial Purification and Determination of Thermal Inactivation Parameters of β -glucosidase from Muscat of Bornova grape

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Abstract

β -glucosidase (β -D-glucoside glucohydrolase, EC 3.2.1.21) catalyzes the hydrolysis of the β -glycosidic bond between two glycone residues (e.g., cellobiose and other β -linked oligosaccharides) or that between glucose and an aryl or alkyl aglycone. The enzyme constitutes a major group among glycoside hydrolases and occurs universally in all three domains of living organisms. Flavor compounds in many fruit and plant tissues are glycosylated and accumulate as nonvolatile and flavorless glycoconjugates. The glycosidically bound volatiles can be released by either acid or enzyme hydrolysis. Slow acid hydrolysis takes place at fruit juice pH and can be accelerated by thermal treatment, which, however, can reduce the sensory quality of the products. Some aglycones are already odorous when released from glycosides. They can contribute to the floral aroma of some wines, grapes, apricots, peaches and tea. Glycosidases catalyze hydrolysis of the glycosidic bond of their carbohydrate substrates by two general mechanisms, leading to either the retention or inversion of the anomeric configuration at the cleavage point. Volatile compounds (monoterpenes, vanillin) can be liberated from β -D-glycosides through the action of β -glucosidase. Muscat grapes are the most aromatic of all the *Vitis vinifera* varieties. The cultivar of Muscat of Bornova is a native grape variety of *Vitis vinifera* grown in Aegean region of Turkey. The Muscat of Bornova is a medium, round and thick-skinned grape variety. It is largely predominant in Izmir province of the Aegean region, producing one of the best aromatic wines of Turkey. The aim of this study was to partial purification and determination thermal inactivation parameters of β -glucosidase from Muscat of Bornova. In conclusion Energy of activation (E_a) and Z values were found to be 120.99 kJ mol⁻¹ ($r^2=0.9776$) and 18.08 °C ($r^2=0.9750$), respectively.

Keywords: Grape, purification, β -glucosidase, thermal inactivation

Efficacy of Some Treatments on PVY and PVX Infected Potato Plants

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Abstract

Elimination of PVY and PVX from potato supply is essential for seed potato production. In this study, the efficiency of some combined techniques (chemo- and electrotherapy) in decreasing the infection level of PVY and PVX infected plants was evaluated. Plantlets (cv. Roclas) obtained from PVY and PVX infected material were used in the experiments. Electrotherapy was applied in several variants: the infected plantlets were exposed to 100 mA for 5, 10 and 20 minutes, washed, divided into single node cuttings and multiplied *in vitro*. Chemotherapy was undertaken with ribavirin (RBV) and oseltamivir (OSMV). *Solanum tuberosum* L. plantlets regenerated were removed from the culture medium, acclimated in green house. The survivor plants were indexed (DAS ELISA, Bioreba, Switzerland). The variant leading to highest rates virus elimination and plant regeneration was estimate using the Therapy Efficiency Index (TEI). Distinguished virus elimination rates were obtained for all the material infected, using the most severe variants of electrotherapy (100mA/10minutes; 100mA/20 minutes). The highest value for this percentage were registered in case of material infected with PVX.

Keywords: Potato Virus Y, Potato Virus X, electrotherapy, chemotherapy.

The Effect of Volcanic Structures on Residential Areas (Between Nevşehir-Konya), Central Anatolia, Turkey

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Abstract

This study aims at analysing the relationship between settlement areas and topography in the volcanic areas around Aksaray, Ereğli, Karaman, Karapınar and Niğde between Kayseri and Konya where the Central Anatolian Volcanics are spread. Lava and pyroclastic materials from different periods constitute a significant part of the geological structure. Working morphodynamic and morphoclimatic denudational processes led to the emergence of diverse topographic appearances. Settlement areas established in this neighbourhood face natural risks that often reach to the extent of disaster. From past to the present, the fundamental problem of the settlement areas is not to consider the adequacy and sustainability capacities of the topography. Floods and various mass movements (landslides, dislocation, stone block flows) are important incidents that often occurred recently. Revealing potential natural risk areas in the geography means solving a significant part of the settlement areas problems. In the study, the settlements were categorized in terms of natural risk areas, and data on housing areas were synthesized and assessed in the digital environment. In the studies, the active role of mass movements and rain and flood waters that could reach the extent of disaster was taken into consideration, particularly in the selection of spatial locations. Certain predictions were developed in terms of different risk factors between the settlements and possible risks that may arise in the future.

Keywords: Land Use, Natural Risk Areas, Settlement, Sustainability, Volcanic Topography

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Evaluation of Relief Morphometry of Kılıçözü And Acıöz Drainage Sub-Basins (Kırşehir, Turkey)

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Abstract

The morphometric analysis of the drainage basin and channel network play an important role in understanding cause of flood occurrence in basin. In the present study, morphometric analysis has been carried out using Geomorphological Information system (GIS) techniques to assess the relief morphometry of Kılıçözü and Acıöz drainage basins which are subbasins of the Kızılırmak main river (the longest river of Turkey). These basins have been subjected flooding in several times. The obtained values of slope and morphometric parameters (basin relief, relief ratio, time of concentration, hypsometric curve and hypsometric integral) indicate that both basins are not different from each other with respect to flood occurrence, however, the Acıöz subbasin is more prone to flash flood. This result will help producing sustainable management plan of the basins to overcoming the flood.

Keywords: Flash flood, Relief morphometry, Basin management, Kırşehir.

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A Software Development for Real Time Spray Control System in Herbicide Application

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Abstract

Advances in different technologies, such as high-resolution vision systems, innovative sensors and embedded computing systems, are finding direct application in agriculture. In precision farming, image analysis techniques can aid farmers in herbicide applications, and thus lower the risk of soil and water pollution by reducing the amount of chemicals applied. Optical sensors and computer vision, which can be used in automated weed detection and control spray systems, are being used in recent years extensively. A real-time auto tracking and determination system for weed detection and spray on/off were designed, built and set up in the chemical application laboratory at the Department of Agricultural Machinery and Technologies Engineering of Çukurova University. In this study; to get the target images, a web camera, mounted at a height of 50 cm above the target object was used. During the start of the weed tracking operation, the web camera captured images of the artificial weeds. Developed software, which could be reprogrammed and adjusted according to the user preference, was created by using LabVIEW. Weed coverage was determined from each image by using a “greenness method” in which the red, green, and blue intensities of each pixel were compared. The sprayer nozzle was turned ‘on’ or ‘off’ by using a data acquisition card and a relay card, depending on the green colour pixels of weeds. The sprayer valve opened the nozzle when the camera detected the presence of weeds. Image processing performance of this system, in where nozzle and camera were mounted at a stationary position while weeds were on a movable belt, was tested at the different speeds of conveyor belt consisted of an inverter drive system and 3 phase 4 pole electric motor. The laboratory performance evolution revealed that the proposed system could successfully detect the weeds and could be used to decrease the herbicide quantity.

Keywords: Weed, Image processing, LabVIEW



Knowledge Transfer Activities Support Food Businesses of Traditional Smes

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Abstract

The aim is to describe an effective model of knowledge transfer activities on participating European traditional producers, small and medium-sized enterprises (SMEs) under the EC-FP7-KBBE-TRADEIT-project. The nine hubs successfully delivered their planned localised and customised training in Finland, Germany, Ireland, Italy, Poland, Portugal, Spain, and the UK. Additional workshops were delivered based on emerging needs of the SMEs as identified through feedback from the companies and through the case studies. In total, 60 training events were run across the nine hubs. 1178 participants attended these events of which 866 were SME food producers. The participants were food producers, other food business operators, food associations, academic researchers, students, funding agencies, food safety inspectors, policy makers etc. This provided a vibrant atmosphere, and facilitated transfer of knowledge in different formats and from diverse and relevant perspectives. Feedback from the SMEs has been very positive overall. Knowledge transfer was an integral part of the formation and consolidation of the Europe wide network, as it provided an opportunity for the food companies to meet frequently and engage with each other, as well as with the trainers and hub advisors. Hub advisors were key facilitators in the knowledge transfer activities, providing local and regional knowledge to critical insights to the needs of the SMEs. Flexibility and adaptability was required to respond to the SMEs, in particular to deliver the training when the food companies were generally constrained by extremely busy schedules. The module topics were highly relevant. The companies benefitted from the training events, as demonstrated by the survey conducted after completion of the workshops. The high standards and professional approach taken by module developers and trainers was especially appreciated, with mainly positive feedback from each event. The knowledge transfer actions will continue via the on-line training units and rich repository of localised training resources.

Keywords: Food industry, SME, knowledge transfer, model

FT-IR identification of phytase active lactic acid bacteria and yeasts from sourdough samples

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Abstract

Fourier-transform infrared (FT-IR) spectroscopy and cluster analysis were performed to differentiate and identify phytase positive lactic acid bacteria and yeasts isolated from sourdough samples collected from Turkey. In the study, sourdough samples were provided from both bakeries and houses. Lactic acid bacteria and yeasts were isolated from samples and to screen for the production of phytase by the totally 41 LAB and yeast isolates were inoculated on a sodium phytate containing medium and incubated at 30°C for 48 h. To eliminate results occurred as a result of bacterial acid production petri plate was flooded with 2% (w/v) aqueous cobalt chloride, aqueous ammonium molybdate and ammonium vanadate solutions after monitoring the clear zones. After elimination of phytase negative isolates, spectrophotometric phytase activity was performed. For FT-IR identification Yeast strains were grown on YGC agar (Merck, Darmstadt, Germany) at 27°C and LAB were cultivated APT agar at 34°C for 24 hours. Cells were suspended in 100 µL of distilled water and 25 µL each were transferred onto the ZnSe table. The suspensions were left to dry in an incubator at 40°C. FT-IR measurements were performed using a HTS-XT unit coupled to a Tensor 27 spectrometer and data were analysed with the software OPUS. In order to compare the spectra of the different strains, cluster analysis was applied. Totally 36 LAB and 45 yeast strains were identified with FTIR Spectra. *Lactobacillus plantarum*, *Lb. brevis*, *Lb. fermentum* and *Lb. pentosus* was determined among LAB isolates and also *Saccharomyces cerevisiae* was the major yeast. Additionally, *Saccharomyces pastorianus*, *Candida glabrata*, *Kluyveromyces lactis* and *Pichia membranifaciens* were also detected. FT-IR can be used as an easy method to classify and identify microorganisms, especially to decrease isolate numbers before PCR based identification techniques to avoid time wastage and exceed chemical usage.

Keywords: Sourdough, lactic acid bacteria, yeast, FT-IR spectroscopy, identification

The Determination of Yield and Yield Components of Durum Wheat (*Triticum Durum* L.) with Different Sowing Densities in Bed Sowing Methods

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Abstract

In present study the aim has been to determine yield and yield components of durum wheat grown via bed sowing method by employing a variety of sowing densities. As the cultivar, a forward line (DUZF-Line 299) developed by Dicle University Faculty of Agriculture Department of Crops were used. In the study bed sowing was conducted as 2 lines on beds and 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600 and 650 grains per square meter. The test has been executed according to randomized block design with 3 replications under irrigated conditions. According to precipitation conditions and necessities, irrigation has been performed during 3 critical periods (tillering-booting, earing and milk stage). In the study the number of plants per square meter, plant height, lodging rate, spike length, number of spikelet spike⁻¹, grain number spike⁻¹, grain weight spike⁻¹, weight of 1000 grains, spike number per square meter, grain yield, test weight and harvest index rate were investigated. As the three factors that directly affect the yield per unit in cereals, the number of spikes per unit area, number of grains per spike and weight of grains per spike were examined it was detected that 600 seeds/m² bed planting method was the best one for durum wheat in bed sowing method under wet conditions and the second best method was the one with 550 seeds/m².

Keywords: Bed sowing, durum wheat, sowing density, yield

Determination of mineral and fatty acid composition of ornamental pumpkin seeds (*Cucurbita pepo* var. *ovifera*) from Turkey**Akife Dalda SEKERCI¹, Kevser KARAMAN², Halit YETISIR¹, Osman SAGDIC³**¹Erciyes University, Faculty of Agriculture, Department of Horticulture, 38039 Kayseri-Turkey²Erciyes University, Faculty of Agriculture, Department of Agricultural Biotechnology, 38039 Kayseri-Turkey³Yildiz Technical University, Faculty of Chemical and Metallurgical Engineering, Department of Food Engineering 34220 Istanbul - Turkey*Corresponding Author: kevserkaraman@erciyes.edu.tr**Abstract**

Ornamental pumpkin belongs to *Cucurbitaceae* family and is included within *Cucurbita pepo* var. *ovifera* botanical class. They are commonly cultivated for ornamental uses and known as a group of hard-shelled, colorful, and odd shaped fruits. In the current study, the seedling production of pumpkins was carried out from 39 different genotypes in unheated greenhouse belonging to Erciyes University, Faculty of Agriculture, Department of Horticulture. The seeds were extracted from mature fruit and the required amount of whole seeds were milled and used in the analyses. Totally 39 different genotypes were used to evaluate fatty acid and mineral compositions. Palmitic, stearic, oleic and linoleic acids were detected as the major fatty acids in studied pumpkin seeds and linoleic acid had the biggest proportion among the fatty acids (-42-66%). The seeds contained variable amounts of minerals (mg/kg) such as potassium (8490-21798), magnesium (3626-7692), phosphor (13902-28686) and calcium (16602-64320) respectively indicating the mineral richness. Pumpkin populations show big variation in terms of fatty acid and mineral contents. These variability can be utilized by breeders to develop pumpkin seed cultivars with desired characteristics in breeding programs.

Keywords: *Cucurbita pepo* var. *ovifera*, ornamental pumpkin, mineral, fatty acid



Effect of root, stem and leaf weights and leaf counts on the bean genotypes (Phaseolus Vulgaris L.) of chilling stress application

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Abstract

The aim of this study is to determine the developmental performance of the 18 bean genotypes belonging to Phaseolus vulgaris L. belonging to Anatolia's many components, chilling according to the organs below. Fidelites of ten different bean genotypes were cultured in the growth chamber under controlled climatic conditions and in the vessels containing the Hoagland nutrient solution. Cold stress application in the conditioning room in the temperature of +4 0C plants kept for 5 days. Root, stem and leaf weights and leaf counts of plants were examined after application. As a result of the research, it is seen that there are differences between the genotypes organs as well as differences between the genotypes.

Keywords: Beans, Phaseolus vulgaris L., Chilling Stress, Roots, Stem , Leaf

Investigation of the Use of Natural Ornamental Plants in Landscape Design in Open Green Areas: Van Province Example

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Abstract

Van province, natural and historical values has a very rich identity. It is also one of the important cultural centers of the Eastern Anatolia region. Due to the challenging climatic conditions and distance from many production centers, it has a very limited variety in terms of species that can be used in landscape design. In addition, the lack of sufficient seedling production facilities in the city limits the use of plants. In this case, it is necessary that spontaneous natural plant species should be used in landscaping and design. In the city center there are many parks, public institutions, open green spaces, road and green belt afforestation, and various private property garden designs and plantations in different parts of the city. When planting studies and planning are carried out, the selection of the correct species is particularly suitable for the region climate and for the permanent plant preference, the region has the greatest prevalence for the region experiencing the intense winter season. The use of natural species, especially in the region, in landscape design is important both for easy adaptation of the plant and for creating a sustainable and economical design. In this study, the sample areas located in the open green areas of Van were examined by classifying them as urban parks, neighborhood parks and pocket parks according to the importance order of size and functionality. Natural species used in these areas were determined and evaluated in terms of their usage purposes and the appropriateness of the places used in the design. As a result of the investigations and evaluations made, some solution proposals have been developed by putting problems about the applications.

Keywords: Natural Ornamental Plants Species in Landscape Design, Open green areas, Natural Ornamental Plants Species of Van, Natural Ornamental Plants

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Geostatistical Analysis of Spatial Variation in Forest Ecosystems

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Abstract

Geostatistical methods are widely used in evaluation of spatial variations of terrestrial ecosystems. Spatial variation of forest ecosystems can provide considerable implications for sustainable management of forest resources. In addition, knowledge on spatial variation of forest soils is necessary for an adequate understanding of the soil's role on forest vegetation and making precise estimates on ecosystem-level processes. Number of studies have been conducted on spatial variation of forest ecosystems. In this study, first, we discussed the sources of spatial variation in forest ecosystems and then discussed application of geostatistics for characterizing spatial variation on forest variables.

Keywords: Climate, Forest ecosystems, Geostatistics, Forest soils, Topography



Advances in Soil Structure Diagnoses

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Abstract

It is difficult to understand soil microstructure due to the complexity of the related soil processes. Therefore, to better understand soils, morphological features should be investigated in greater details with the use of advanced technology. New developments of these technologies and of their combination provide contribution for better evaluation of soil morphological properties and relationships between soil structure and water movement. In multiphase porous materials, qualitative and quantitative information can be collected non-invasively by these methods. With the computer-assisted and nondestructive advanced technology such as computer microtomography (μ CT), models which could give more reliable results have been used in the last ten years. In this regard, microCT is used to display 3D morphological properties of undisturbed soil samples in greatest detail. 3D has become a powerful tool for characterizing the structure of soils for the past few decades. 3D-printed structures of undisturbed soils are obtained with a resolution of 80 μ m with this technique. Experiments showed that more successful results were obtained with these techniques compared to 2D and/or direct observations and provide high quality images. The results of studies indicated that new technologies would contribute to understanding the micro-heterogeneity of soils and its relation to soil-water dynamics. In this way, using a 3D for imaging of soil structure would be a good tool to develop soil hydraulic models. In this paper, we discussed use of advanced technology in soil structure diagnosis.

Keywords: Soil morphology, 3D-printed soils, X-ray computed microtomography, soil-water dynamics

Effect of Stimplex® , A Commercial Organic Biostimulant, on Growth of Ornamental Pepper Plants

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Abstract

A greenhouse experiment was conducted to evaluate the effect of Stimplex® (*Ascophyllum nodosum* extract, Acadian Seaplants) on the growth of the ornamental pepper plants. Containing a complex array of bioactive compounds, Stimplex® is a premium organic biostimulant that promotes the growth, development, and yield in a wide range of conventional and organic grown horticultural and ornamental crops. Ornamental pepper plants were treated with Stimplex® crop biostimulant as either a soil drench or foliar spray at 0, 0.25, 0.50, 0.75, and 1.0 ml·L⁻¹ concentrations twice at 10-day intervals. By the end of the experiment, Stimplex®-treated ornamental pepper plants (drench and foliar application) grew significantly more than the control plants. The results of this study indicate that Stimplex® may be a viable tool for improving growth of ornamental pepper plants.

Keywords: Ornamental pepper, Organic, Stimplex, Biostimulant, Growth

The Level of Consciousness for Social Security of Employees in Agriculture

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Abstract

In this study, the social security status of Konya Beyşehir farmers Emen village in the district were analyzed according to different farm types and level of awareness of farm owners. The study identified the main material, according to stratified random sampling method to represent the farming business made up of data obtained from 50 farms. It has also benefited from the studies done on the subject before. According to the study results, there is differences on the state of farmers' enrolment to the Social Security Institutes. The 52% of the farmers was registered to Bağkur, while 42% and 6% of them were in Retirement Fund and SSK respectively. There is no linear relation between the state of social security and amount of land, farm types and agricultural income of the farmers. However, the enrollment rate of the farms to Agricultural Bağ-Kur in the 2 and 3 stratifies are very close, but the rate is in the 1 stratify is very low.

Keywords: Social security, awareness, agriculture

Effects of Endophytic Bacteria on Some Growth Parameters of Pepper Under Biotic Stress

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Abstract

The aim of this study was to evaluate the effect of endophytic bacteria (EB) isolates on pepper growth parameters under the bacterial spot disease caused by *Xanthomonas euvesicatoria* (*Xe*). Four EB strains *Ochrobactrum sp.* CB36/1, *Pantoea agglomerans* CC37/2, *Bacillus thuringiensis* CA41/1 and *Pseudomonas fluorescens* CC44 were tested to determine effects on the disease and some growth parameters of Pepper (Demre cv.) in climate chamber. The EB strains applied for two times to seedlings as drenching at second leaf stage and 4 days before inoculation of *Xe*. The suspension of *Xe* (10^8 cfu ml⁻¹) was applied as spraying on seedlings that were growing on peat medium at four weeks old. The seedlings were grown in chambers at 24±2 °C, 60% humidity, under 14/10h day/night photoperiods in climate chamber. Any EB strains didn't significantly limit the disease. But some of them significantly increased plant growth parameter under the disease pressure. In general *Xe* inoculation negatively affected growth of pepper seedlings. *Ochrobactrum sp.* CB36/1 *P. agglomerans* CC37/2 increased fresh weights shoot at the rate of 28% and 29% respectively. The plant rot fresh, shoot and rot dry weights were increased at the rate of 115%, 44,8% and 128% by *Ochrobactrum sp.* CB36/1 respectively, even under the disease pressure.

Keywords: Endophytic bacteria, *Xanthomonas euvesicatoria*, Bacterial spot disease, Pepper

The Impact of Gravading Process and Vacuum Packing on The Shelf Life of Carp Fillets (*Cyprinus Carpio*)

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Abstract

The chemical, sensory, microbiological and textural changes of vacuum-packaged 'gravad' carp fillets (*Cyprinus carpio*) were assessed during storage period at 3°C. According to chemical assessment, no significant differences in pH, NaCl and sugar values were found between fresh gravad at day 0 (FG) and gravad after storage of 8 weeks (GA) ($p > 0.05$). However, pH in raw carp fillets (RC) was considerably higher than those of fresh and stored gravads. The limit for sensory acceptability of vacuum packed gravad was found to be more than 8 weeks. The process of gravading and vacuum packing caused a decrease in the level of *Enterobacteriaceae* and total viable count did not exceed the acceptable limit of 10^6 – 10^7 cfu g^{-1} . The values of cohesiveness and chewiness increased during storage period due to gravading process. This process also caused to slight increase of hardness and no change in springiness. However, all the above mentioned texture parameters showed a tendency to decrease after 8 weeks of storage for gravad at 3°C (GA). During the relaxation test, changes in stress decay were observed. The *a* value was higher in RC than those of FG and GA whereas the *b* value was lower in RC than those of FG and GA. Gravading process with vacuum packing improved sensory, physical and microbiological quality of gravad carp fillets and allowed to obtain a new low processed fish products.

Keywords: Gravad, carp, texture, storage stability

Effects of Row Spacing on Dry Matter Yield and Quality of Annual Ryegrass (*Lolium multiflorum westerwoldicum* Caramba)

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Abstract

This study was conducted during the growing seasons of 2013-2014 and 2014-2015, to investigate the effects of different row spacing (15 cm, 20 cm, 25 cm, 30 cm and 35 cm) on dry matter yield and quality of annual ryegrass in Bursa, Turkey. In this study, *Lolium multiflorum* cv. *caramba*, a cultivar of annual ryegrass is used as the plant material. The field trials were arranged in a randomized block design with three replications. Three cutting was made in both experiment years. According the results, average of two years the different row spacing significantly affected dry matter yield, crude protein rate and yield, ADF and NDF contents in all cuttings. The averages of the two-year findings indicated that the highest dry matter yields were determined at 20 and 25 cm row spacing in 1 st and 2 nd cuttings, at 25 cm in 3 nd cutting and the highest total dry matter yields (16214,0 and 16726,0 kg ha⁻¹) were obtained at 20 and 25 cm row spacings. Moreover, the highest mean crude protein rate (11.22 and 11.67 %) were determined at 20 and 25 cm, the highest total crude protein yields were determined (1863.10 kg ha⁻¹) was determined at 25 cm, the lowest mean NDF contents were obtained at 20 and 25 cm row spacings. As a result, 25 cm row spacing can be recommended for experimental and similar ecologies because of its higher dry matter and crude protein yields.

Keywords: Annual ryegrass, dry matter yield, crude protein, quality



The Disability Standards And Unimpeded Design At Nevşehir Hacı Bektas Veli University Campus

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Abstract

The Universal Declaration of Human Rights which defines the rights of persons with disabilities with expression of “Recognizing that promoting the full participation and participation of people with disabilities in the welfare and diversity of the community and the positive contributions and obstacles they may make to human rights and fundamental freedoms contribute to their social belonging, their human, social and economic development and the reduction of poverty” and many different provisions, and emphasizes universally designed products and services to meet the specific needs of the disabled. In addition, the development of the minimum standards and guidelines for access to facilities and services that are open to the public or to public service has been materialized within the scope of accessibility. The availability of disabled people in society, the equal use of all areas can be achieved with easy access, secure, healthy, comfortable public spaces. Undoubtedly, universities should be the public spaces that offer sample design in this sense.

In this study; The concept of unimpeded design and the standards of disability were examined and current status of Nevşehir Hacı Bektaş Veli University Campus was assessed as being suitable for disabled standards. Positive and negative aspects were put forward and suggestions were made.

Keywords: Disabled standards, campus, Nevşehir.



Agricultural Landscape Pattern and Agricultural Tourism Potential of Nevşehir

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Abstract

Agricultural land being shaped depending on soil, climate and land structure, and consist of various size which vary from thousands of acres of land where a particular crop is grown to smaller formal gardens. Agricultural landscape is a sample of transition from natural landscape to cultural landscape, and it has emerged where people began growing crops for economic purposes. Besides the production of agricultural products agricultural landscapes also have ecological, economical and social impacts such as soil protection, cultural green texture and creating aesthetic appearance, creating a living environment for the wildlife and contributing to tourism. Agrotourism, by combining agriculture and tourism, offers new sources of income for farmers. In this context, in recent years has a growing importance and increasing popularity within the framework of sustainable tourism. In this study, distribution and parceling forms of agricultural landscapes that shaped the agricultural landscaping pattern of Nevşehir have been revealed by field survey, and rural settlement plan was created by specifying the characteristics of agricultural settlement types. Later, the potential of agricultural tourism which one of the nature-based tourism activities that support the development of rural areas in the region has been assessed. Also possible applicable models for Nevşehir were put forward. As a result, suggestions are presented for the development of agricultural tourism in Nevşehir, which is an important region for cultural tourism of our country, that will contribute to tourism potential of region.

Keywords: Rural landscape, Agricultural landscape, Agricultural tourism, Nevşehir

Soil Moisture Content Prediction by Visible and Near-Infrared Spectroscopy

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Abstract

Visible and near infrared (Vis-NIR) spectroscopy is a non-destructive method on samples in soil analysis and might potentially replace conventional soil analysis methods. The aim of this research is to investigate predicting accuracy of soil moisture content by Vis-NIR spectroscopy. This study was conducted in a field with clay texture, in Karacabey Farm in Bursa, Turkey. A total of 90 soil samples collected from the study field were subjected to optical scanning with a portable, fibre type, Vis-NIR spectrophotometer (tec5 Technology for Spectroscopy, Germany) in the laboratory to evaluate the performance and accuracy of the calibration models for the prediction of soil moisture content. Before the partial least square (PLS) regression analysis of the diffuse reflectance spectra, entire reflectance spectra were randomly split into calibration (80%) and prediction (20%) sets. A leave-one-out cross-validation PLS regression analysis was carried out using the calibration set, whereas the model prediction ability was tested using the prediction set. Model performance was evaluated by means of coefficient of determination (R^2), root mean square error of prediction (RMSEP) and ratio of prediction deviation (RPD). Results demonstrated that the laboratory prediction performance of soil moisture content in the prediction set was very good with $R^2 = 0.87$, RMSEP = 1.83 % and RPD = 2.47 in prediction and $R^2 = 0.76$, RMSEP = 1.93 %, RPD = 1.85 in cross validation. This study proves that Vis-NIR spectroscopy can be successfully measured the soil moisture content with a small deviation under laboratory scanning.

Keywords: Soil moisture content, PLS regression, Vis-NIR spectroscopy

Effect of Different Culture Plant Coverings on Soil Surface Temperature

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Abstract

Plant covers have highly complicated effects on soil thermal properties due to multiple interactions among plants, soil, and soil thermal properties. Plant cover type and its spatial orientation can affect soil surface temperature and soil thermal properties. Soil thermal properties differ under different plant covers. This study was conducted to model diurnal and seasonal change of soil surface temperature in soil profiles under sugar beets (*Beta vulgaris*), corn (*Zea Mays*), and bare soil (*control*) plots in Cumra region of Konya (Drysubhumid/ Semiarid Continental Central Anatolian climate) located in Central Anatolia of Turkey. The study soil is a young alluvial clay loam, which is low in organic matter. The measurements were repeated at sugar beet, corn and bare soil plots. In each experimental plot, soil temperature was measured with water-proof portable thermal sensors (*Thermochro the iButton DS1921G*) placed at soil surface. Eight temperature measurements were recorded in each day (at every three hours) during seven months of experimentation. Greatest soil surface air temperature occurred under sugar beet canopy, followed by bare soil, and corn canopy. This was attributed to heavy and dense canopy of sugar beet that worked as an insulator for temperature on the soil surface, decreasing convective heat loss by wind and latent heat loss by evaporation. On the other hand, relatively light corn canopy and bare soil surface allowed wind flow that resulted in heat loss by convection and by evaporation from the soil surface. In addition, vertical distribution of light in corn canopy resulted in less light reaches to the soil surface, resulted in slightly cooler air at soil-air interface.

Keywords: Soil thermal properties, Soil surface temperature, Plant canopy, Soil heat balance, Relative humidity



Modeling Soil Thermal Properties in Corn (*Zea Mays*) Canopy in Semiarid Anatolia

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Abstract

Soil thermal properties directly affect soil productivity. Thermal properties of soils under different plant covers show differences and a complicated relations with plant cover type as plant cover affects both amount and partitioning of solar radiation on the soil surface and heat flow and storage in the soil profile. The vertical changes of air temperature, environmental moisture, wind, and radiation show substantial differences across different plant cover types. Therefore, most of the models developed for predicting soil thermal properties were applied to bare soil conditions. This study was carried out to model soil temperature under corn (*Zea Mays*) canopy and bare soil and to compare the results. This study was conducted to model diurnal and seasonal change of soil temperature in soil profiles under corn in Cumra region of Konya located in Central Anatolia of Turkey. The measurements were repeated at tree experimental corn plots. In each experimental plot, soil temperature was measured with water-proof portable thermal sensors (*Thermochro the iButton DS1921G*) placed at 0, 5, 10, 20, and 30 cm soil depths. Eight temperature measurements were recorded in each day (at every three hours) at all the soil depths during seven months of experimentation. Soil temperature was modeled at 0, 5, 10, 20, and 30 cm soil depths with layer (the amplitude algorithms), point1, and point2 methods. Point1 and point2 methods yielded similar results compared to those by layer method and one point1 and point2 methods outperformed layer method in all the cases. The results suggested that type of analytical solution and initial conditions used in models were important factors determining the performance of modeling. In this regard, the point2 method can be preferred over point1 and layer methods in modeling soil thermal properties. The experiment should be repeated in different crops, soils, and climates to generalize the results.

Keywords: Soil thermal properties, Plant covers, Radiation, Soil heat balance, Relative humidity, Modelling

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Control of Transplant Height In Cabbage Using Plant Growth Regulator Prohexadione Calcium

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Abstract

Plant growth regulators play important roles in the regulation of the various developmental processes, such as controlling plant height. The objective of the present experiment was to investigate the effects of Prohexadione-Calcium (Pro-Ca) concentrations (0, 25, 50, 75, and 100 mg.L⁻¹) and application methods (foliar spray and soil drench), on growth and quality of cabbage transplants. Plant growth measurements of the 5-week-old cabbage transplants included transplant height, internode length, stem diameter, number of true leaves, root length, shoot fresh and dry weights, root fresh and dry weights, and relative leaf chlorophyll content. Application of Pro-Ca caused an immediate vegetative growth reduction, most dramatically demonstrated by a reduction in transplant height (up to 34%) and internodes length (up to 65%), compared with control treatment. Pro-Ca treatments increased the relative leaf chlorophyll content. These results of the study indicate that lower Pro-Ca concentrations (25 and 50 mg.L⁻¹) can be used to control excessive elongation growth and to produce short cabbage seedlings.

Keywords: Prohexadione-Calcium, Cabbage, Transplant, Height control

A Chromosomal Investigation of *Tegenaria sylvestris* From Central Anatolia Region

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Abstract

Karyological analysis were carried out on the specimen of *Tegenaria sylvestris* (Araneae:Agelenidae). Adult males were collected from central part of Turkey and chromosome slides were made by an air-drying method which included hypotonic and fixative applications. Analyses of mitotic metaphases showed that the diploid chromosome number and sex chromosome system were $2n_{\text{♂}}=42 (X_1X_20)$. All chromosomes including sex chromosomes were acrocentric and gradually decreased in size from 7.43 ± 0.62 to 3.71 ± 0.48 % of total chromosome length. X_1 and X_2 were medium sized in the karyotype. These chromosomally data are being studied for the first time.

Keywords: *Tegenaria*, Agelenidae, karyotype, sex chromosome system, Turkey.

A First Cytogenetical Study on the Family Zoropsidae (Araneae) from Turkey

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Abstract

Spiders are one of the large animal groups including 45000 species all over the world; however the family Zoropsidae contains only 87 species. In this study, chromosome information and meiotic features of *Zoropsis spinimana* were investigated for the first time. As a result, the diploid chromosome number and sex chromosome system were obtained as $2n=22$ and X_1X_20 , respectively. All chromosome were telocentric that gradually decreased in size from 10.71 ± 0.44 to 6.82 ± 0.19 % of total chromosome length. In the first meiotic division, 10 autosomal bivalents and two univalent sex chromosomes were determined. The bivalents had proximal, interstitial and terminal chiasma. In the second meiotic division, two kinds of nuclei were showed as $n=10$ and $n=12$.

Keywords: cytogenetic, meiosis, sex chromosome system, Zoropsidae

The Modelling of Nitrite, Ascorbate and Sorbate Impacts on Some Physical, Chemical and Technological Properties of Fermented Sucuk During Fermentation by Response Surface Methodology

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Abstract

In this study, sodium nitrite, potassium sorbate and sodium ascorbate fermented sausages preserved the technological properties such as taste-flavor, color formation, and some properties of residual nitrite level were investigated. Combinations of the factors according to the response surface methodology have been added to fermented sausage production. The study was carried out with two parallels and two repetitions. At the days 0. and 7. of fermentation PH, aw, TBA values, % Moisture, % Protein, % Fat, Lipolysis, Proteolysis, Peroxide, Color properties of sucuk samples were analyzed. On the 0th day of fermentation, the effect of sodium nitrite on pH, fat, proteolysis, TBA and peroxide values was significant ($P < 0.05$). The effect of sodium ascorbate on protein and aw values was found to be significant ($P < 0.05$), Potassium sorbate was found to have a significant effect on aw and proteolysis values ($P < 0.05$). On the 7th day of fermentation, the effect of sodium nitrite on protein and TBA values was significant ($P < 0.05$), and the effect on moisture and proteolysis was very significant ($P < 0.01$). The effect on sodium ascorbate lipolysis value was found to be significant ($P < 0.05$), and the effect on TBA, peroxide and proteolysis values was found to be very important ($P < 0.01$). Potassium sorbate was found to have a significant effect on pH, protein and lipolysis values ($P < 0.05$) and very significant effect on proteolysis value ($P < 0.01$). The effect of potassium sorbate on the L * and b * values was found to be very significant ($P < 0.01$), and the effect on the a* and b * values of sodium nitrite and sodium ascorbate was found to be significant ($P < 0.05$).

Keywords: Fermented Sausage, Potassium Sorbate, Response Surface Methodology, Sodium Nitrite, Sodium Ascorbate.

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During Storage The Effect of Nitrite, Sorbate and Ascorbate Modeled by Response Surface Method on The Formation of Biogenic Amine and Some Anion-Cation Exchange of Fermented Sausage

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Abstract

In this research, the effects of sodium nitrite, potassium sorbate and sodium ascorbate biogenic amines formation, residual nitrite level on some properties of fermented sucuk was investigated. Response Surface Methodology was added to the combinations according sausage production. The study will be carried out in two parallel and with two replications. At the 0. and at 60. day of storage, the physical (color values), chemical (pH, residual nitrite, biogenic amines and TBA assay), microbiological (lactic acid bacteria, total aerobic mesophilic bacteria, *Micrococcus/Staphylococcus* and yeast-mold count) of sucuk samples were analyzed. Storage day 0 of the sausages pH over potassium sorbate effective, in addition to day 60 with sodium nitrite, potassium sorbate shows significant impact. The effect of storage on the last day of the a_w factor values were not significant ($p>0,05$). The sausages on the first day of the storage TBA values negatively effected by factors positively effected by different levels of potassium sorbate and sodium ascorbate on the last day. The storage fermented sausages on the color values 0 and 60 days on the surface of the inner section L^* values were no significant effects on the factors ($p>0,05$). a^* and b^* values are observed over sodium nitrite and potassium sorbate significant effects ($P<0,05$). End storage, reduction in biogenic amines was determined by the initial value storage. Whereas the increase in the amount of nitrate, ammonium and nitrite decrease in the amount. The first day of storage values that are not influenced by LAB, LAB potassium sorbate in the number of the last day of storage and caused to decrease. Potassium sorbate yeast-mold is seen as an important influence on the number ($P<0,05$).

Keywords: Fermented Sausage, Biogenic Amines, Potassium Sorbate, Response Surface Methodology.

"This study was supported by TUBITAK 1139B411502353 and Abant İzzet Baysal University Scientific Research Projects Coordination Unit 2016.09.04.977."

Bazı Yabancı Ot Su Ekstraktlarının *Alternaria* spp. Üzerine Antifungal Etkileri

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Özet

Bitkisel kökenli fungusitler, çoğunlukla, doğa dostu ve maliyetlerinin uygun olması nedeniyle bitki hastalıklarının kontrolünde etkin bir şekilde kullanılmaktadır. Yabancı otların hastalık ve zararlı etmenlere karşı dayanım yeteneği yabancı otların devamlılık ve adaptasyon yeteneğine bağlı olduğu bilinmektedir. Bu nedenle yabancı otlar anti-microbial bileşiklerin kaynağı olabilmektedir. Bitki hastalıklarının kontrolünde bazı bitkiler içerdikleri bileşenler nedeniyle biyopestit olarak kullanılmaktadır. Bitki ekstraktları farklı çözücülerde farklı antifungal etkilere sahip olup çalışmamızda; Isırgan otu (*Urtica urens*), Yabani Turp (*Raphanus raphanistrum*), Pıtrak (*Xanthium strumarium*), İt Üzümü (*Solanum nigrum*), Şeytan Elması (*Datura stramonium*), Şifa Otu (*Conyza canadensis*) ve Sığır Kuyruğu (*Verbascum* spp.) yabancı otlarının yapraklarından hazırlanan su ekstraktları *Alternaria* spp.'ne karşı *in-vitro* da antifungal etkileri saptanmıştır. Çalışmada domates, çilek ve mandalina meyvesinden izole edilen *Alternaria* spp. izolatları kullanılmıştır. Deneme tesadüf parselleri deneme deseninde 5 tekerrürlü olarak yürütülmüştür. 8 günlük inkübasyon süresi sonunda fungusların koloni çapları ölçülmüş bitki ekstraktlarının antifungal etkisinin belirlenmesinde fungusun miseliyal gelişimi değerlendirilmiştir. Yapılan değerlendirmede yabancı ot yaprak su ekstraktlarının kontrole göre miseliyal gelişimi engellediği tespit edilmiştir.

Anahtar kelimeler: Antifungal aktivite, Yabancı ot, Su ekstrakt, *Alternaria* spp.



An Overview to Women's Empowerment Policies in Rural Areas of Turkey

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Abstract

Women are key actors for development of rural and national economies and they play an important role to achieve sustainable development in terms of economic, environmental and social. They comprise main parts of the world's agricultural labor force and play key roles in food production. Despite their important roles in agricultural economies, women more vulnerable to risks than men. Limited access to credit, health care and education are challenges for them. And also the impact of the poverty on gender is different, and the number of women living in poverty in recent years, especially in developing countries, compared with the number of men increased significantly. The rigidity of gender roles is one of the main responsible fact for this situation. In today's world, where the importance of agriculture is rising due to food crises and climate change, the importance of women in rural areas has also increased and there is a need context specific policies for their empowerment. According to TURKSTAT, while the labor force participation rate of women in Turkey is 33%, this ratio is 46.15% in rural areas in 2016. Women's labour intensity is high in agricultural production but unfortunately they don't accept high wage comparing with men or they work as unpaid family labour. Of course, women also live poverty in different dimensions mainly (Home care, child care, elderly care, interactions with the social environment, education, health and so on), not only as lack of income. All the data shows that there is a need to specific tools to empower women. In order to empower women in rural areas, it is necessary to reveal the powers that women possess, and problems related to many factors that will secure women such as poverty, education, health, agricultural production, entrepreneurship, marketing, organization and social security need to be resolved. In this study, the historical background and current policies of the efforts to empower the women in rural areas of Turkey were examined.

Keywords: Women, rural area, empowerment policy, Turkey

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Improvement of concentrated yogurt production and comparison with traditional production

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Abstract

Yogurt is a dairy product which shelf life is not long. One of the factors affecting the shelf life of yogurt is water amount. In order to extend the shelf life of yogurt, water in yogurt is removed by various methods and thus "concentrated yogurt" is obtained. Concentrated yogurt has been produced by mechanically methods using centrifuge in recent years, although it is traditionally obtained by putting yogurt into cloth bags and leaching the water by itself. In this study, after yogurt is produced, concentrated yogurt is obtained by using a mechanical centrifuge with a drum diameter of 31 cm in different speed of rotation (2 and 4 min at 350 rpm, 2 and 4 min at 600 rpm, 2 and 4 min at 700 rpm), the effects of the rotation speed used on some of the quality characteristics (physicochemical, sensory and rheological properties) has been investigated. In the control group (traditional concentrated yogurt), it was determined that the total dry matter content was 20,75%, the water retention capacity was 45,77, color values as L, a*, b* were 94,18±0,05, 3,27±0,35, 5,46±0,18 respectively, and viscosity value was 5925±119 cP. Also, total lactic acid bacteria, total mesophilic aerobic bacteria, yeast counts and coliform of the control group yogurt were 35,2 x 10⁶± 0,03, 37,1 x 10⁶±0,02, 70,0±0,02 cfu/g and 2±0,01 EMS/g respectively. Additionally, color, aroma, consistency (in the spoon), consistency (in the mouth), taste, spreadability and appearance were organoleptically evaluated on the basis of the changes on days in the sensory properties of concentrated yogurt and it has been determined as 32±0,41 over 35 points in total. At the mechanical production used with different speeds, the closest value (at 700 rpm/ 4 min) to the control group were determined as 21.90% of total dry matter, 47.15% of water holding capacity, 28±0.14 of organoleptic scores over total 35 points, 94,79±0,12 of L value, 2,49±0,03 of a* value, 5,620±0,001 of b* value, 4781±160 cP of viscosity value. Also total lactic acid bacteria, total mesophilic aerobic bacteria, yeast counts and coliform of the mechanical yogurt production were 37,9 x 10⁶±0,03, 38,1 x 10⁶±0,02, 50,2±0,01 cfu/g and 2±0,01 EMS/g, respectively. The measured rheological parameters (loss modulus [Pa], frequency [Hz]) of the mechanical yogurt production were obtained at 700 rpm - 4 min as the closest to the control group.

Keywords: Concentrated yogurt, rheology, traditional and mechanical production



Evaluation of visual landscape perception for urban pedestrian road : A case-study in Antakya city

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Abstract

This study aimed to evaluate the visual landscape perception of urban pedestrian roads in the process of planning and designing by integrating both individual preferences and the utility of urban pedestrian roads which can contribute to individual and mass leisure time activities and urban transportation. The main material of the work is 20 photographs belonging to Antakya urban pedestrian roads. These 20 photographs were selected from among 250 photographs taken from different points of pedestrian recreationally active used areas in Antakya, according to criteria such as pedestrian use, recreational availability, maintenance status, photo quality, naturalness of the visual elements in the photo. All of the photographs belong to the urban areas used by the pedestrians. Photo-based questionnaire studies were administered to three separate group consisting of user, expert and decision maker. In order to evaluate the visual landscape perception in the questionnaire, 13 adjective pairs (Closed/Narrow/ Irritable - Capacious / Wide / Relaxing, Artificial (building, hardscape etc.) - Natural (Plant, tree, shrub, grass etc.), Insufficient Green- Mass Green, Interesting-Not Interesting, Catchy – Not catchy, Maintenance-free – Well-kept, monotony in color-Diversity in color, Monotony in texture and form-Diversity in texture and form, Static space - Dynamic space, Complicated – Regular, Ordinary- Extraordinary, Incompatible-Compatible) were determined. In the questionnaire, the evaluations of these adjective pairs were made on a Likert scale of 5 points. In the last phase, the application of scale was examined with the help of correlation analysis. In the examination, each group was correlated both individually and comparatively. The results show that required features of urban pedestrian roads for all groups are not reflected in the case study of Antakya. It has also been found that regularity, openness, maintenance levels and the presence of natural elements directly affect the preferences of pedestrians that use urban pedestrian roads.

Keywords: Visual landscape perception, Pedestrian roads

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The Knowledge Level of Food Safety of Gastronomy and Culinary Arts Students

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Abstract

Foodborne diseases resulting from the consumption of contaminated food are a serious public health problem, as well developed countries, causing a significant social and economic burden on communities and their health systems. Analyses of foodborne disease from numerous countries has shown that mass catering and food service facilities are the most frequent cause of outbreaks. This study aims to measure the level of food safety knowledge of the Gastronomy and Culinary Arts students that will be working as chefs or manager in the food and beverage businesses. A total of 113 students at Abant Izzet Baysal University were participated in this question survey study. The overall knowledge score was determined as 72.88% and significantly associated with both the education level and taking course about food safety ($p<0.05$). No statistical significant difference among gender, different age groups and following the latest developments was found ($p>0.05$). The biggest knowledge gaps that have been identified in relation to time/temperature control and cooling. As a result, it has been determined that students appeared to be much better than food handlers in many studies that are related to food safety knowledge level, but there are deficiencies in practice. Providing a good food safety training to students who are trained in this area will ensure that food safety problems that may arise in the future are avoided. The importance of this issue in all gastronomy and culinary arts departments should be increased making necessary adjustments to give an effective food safety course.

Keywords: food safety, gastronomy, student, education, knowledge level, knowledge gap

Boron Sources in the Soils, Effects and Removal Methods

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Abstract

Boron in the soil is exist result of disintegration of parent material, industrial pollution or as a product of decomposed plant materials and agricultural surface flows. Additionally, boron accumulation in soils result from usage of the wastewaters and treatment sludges. Boron that is a important element to growth of plants is toxic for plants in case of taken more than necessary. Since lack of boron damage to growth points, the tissue development and growth in plants slows and in an advanced stage the growth points deads. In case of the boron concentration exceed the certain limits, it was observed that the yellowing, burning, cleavage of plant leafs, slowing of growth rate and reducing yield of the product. Boron is a important element for human body in terms of bone health since it balance magnesium and phosphorus levels. However it was reported that of boron be good for heart diseases and reduce of cholesterol, high amount of boron compounds taken in the body shows toxic effects. The highest concentrations are encountered at brain, liver and adipose tissues. Effects of boric acid and borax on human body manifest with nausea, severe vomiting, abdominal pain and diarrhea. Also characteristic another symptom is faded rash resulting in skin rashes. In serious situations, it may be shock together with tachycardia and decrease in atrial pressure. In the land reclamation of the soils containing low levels boron, one of the best procedures is water sprinkled or ponded on the surface. But nowadays, in the land reclamation of soils containing boron is preferred named phytoremediation methods using boron-resistant plants. Plants that survive exposure to boron without a physiological damage takes the boron from soil and amount of the boron in soil decreases gradually.

Keywords: Boron, Soil, Effects, Removal

Role of Forests in Carbon Market

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Abstract

Increasing greenhouse gas emissions resulting from human activities lead to an important environmental problem such as climate change. The Kyoto Protocol aims to solve the global warming and climate change problem by reducing these greenhouse gases. Climate change policies have not yet been fully defined in Turkey. The Kyoto Protocol countries, which have different greenhouse gas reduction obligations, resort to various flexibility mechanisms to achieve this. It has been developed for some flexibility mechanisms to help fulfill the obligations of these countries. Through these mechanisms businesses have gained carbon certifications for carbon emissions they have reduced. Thus, mandatory markets in which these certificates are bought and sold have emerged. However, countries that do not have emissions reduction obligations also voluntarily develop projects to reduce carbon emissions. They are included in the market by obtaining certificates with reduced carbon emissions. The market, which is formed by the holding of carbon credits in forest eaves, is defined as the "Forest Carbon" market. The effect of forest areas on the CO₂ concentration in the atmosphere is huge. As a result of deforestation and reforestation, greenhouse gases are formed. However, forest ecosystems are the most important sinks where carbon is stored and may contribute to the growth of greenhouse gases as well as prevent climate change by linking the CO₂ released into the atmosphere to the organic structure. Although the forestry-based carbon projects developed in the 1990s did not initially find a place in the global struggle, the role of the forestry sector in combating climate change became clear and became an increasingly important issue on a global scale. In this study, the forest carbon market has been evaluated in general by emphasizing the potential of greenhouse gas emission reduction of forests.

Keywords: Carbon market, Forest carbon market, Kyoto Protocol, Climate Change, Greenhouse gases

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Wastewater Reuse in Irrigation

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Abstract

Non-uniform distribution of water resources in the world is the main cause of water scarcity. With the increase in population and living standards, the need for water resources is also increasing. At this point, the reclamation and reuse of treated wastewater is becoming increasingly important. Wastewater is reused for urban, industrial, recreation, groundwater recharge and irrigation purposes. Reuse of treated wastewater, especially for irrigation, is an application promoted and increasingly popular by governments and official agencies around the world. When reclaimed water is used in the irrigation, pollutants such as heavy metals and biochemical oxygen demand can be removed by the soil and plants. Irrigation can increase soil fertility and reclaimed water can encourage plant growth. In addition, most of the nitrogen and phosphorus in the treated water are found in forms that are readily available to plants. Agricultural irrigation with reclaimed water can reduce fertilizer use and crop production cost saves because of nutrient contents. The most important concerns in the agricultural use of treated urban waters are related to the human and environmental health issues. Other concerns include heavy metal accumulation and pollution caused by salinity and water infiltration rate in the soil. For sustainable and safe wastewater reuse, parameters affecting both soil health and safety should be included in quality standards by preventing degradation of soil characteristics and dissipation of the chemical and biological pollutants. At the same time, affordable technological solutions with low environmental impacts should be developed to ensure wastewater treatment processes compatible with sustainable use. Advanced wastewater treatment techniques which produce agricultural wastewater should be used. It is also necessary to evaluate whether the required quality standards have been met while applying the treatment methods.

Keywords: Wastewater, Reclamation, Reuse, Irrigation.

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The Use of Fuzzy Logic Modelling in Time Series for Animal Production

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Abstract

Although the life of human being is full of uncertainty, statistics and probability theory work with accurate data. In order to get some results from an uncertainty, fuzzy logic modeling has been proposed as an alternative to Aristotle logic (0.1). Numerical and verbal expressions are used simultaneously in fuzzy logic. This benefit and the benefit of using partial membership system have been encouraged the use of fuzzy logic in all engineering fields. Fuzzy logic theory has made rapid development in recent decades, since it operates according to the principle of human brain and produces valuable results. Because of these excellent properties, fuzzy logic has been used in recent years in the agricultural field. In this study, two different sets of data are analysed by using fuzzy logic techniques. Different membership functions are used in the analysis, and the results were examined and interpreted. It was shown that Fuzzy logic which is used in different areas of science can also be used in in the field of agriculture and animal science.

Keywords: Fuzzy Logic, Animal Science, Time Series



Eriophyoid Acars (Acarina: Eriophyoidea) on Weeds in Erzurum

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Abstract

The main goal of this work is to determine Eriophyid (Acarina: Eriophyidae) mites fauna on weeds of Erzurum during 2010–2012 years. As a result, *Aceria egmirae* (Denizhan et al., 2006) on *Althea roseae* L., *Aceria malherbae* (Nuzzaci, 1985) on *Convolvulus arvensis* L., *Aceria novellae* (Denizhan et al., 2007) on *Hedysarum* sp., *Aceria salviae* (Nalepa, 1891) on *Salvia aethiopsis* L., *Aceria tinctoriae* (Denizhan et al., 2006) on *Anthemis tinctoriae* Rech., *Aceria verbasci* (Boczek, 1964) on *Verbascum* sp. and *Eriophyes euphorbiae* (Nalepa, 1891) on *Euphorbia* sp. were determined.

Keywords: Acarina, Eriophyoidea, Weeds, Erzurum

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Usage of Fruit Juice Processing Waste on Active and Bio-Degradable Food Packaging Composite Production

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Abstract

The food packaging sector widely uses polymers derived from petrochemical resources. The reckless dumping of such plastic packaging into the environment is a significant environmental problem. Decomposition of these waste materials in the natural environment can take hundreds of years. Also collecting, recycling and recovering packaging waste in a satisfactory level has significant economic and cultural implications. Plastic based packaging materials maintain higher shelf life of the food products. It is important to transform these materials into non-toxic final products during their disposal. Also it is possible to add anti-oxidant and anti-microbial characteristics to the synthetic polymers used in food packaging. Therefore, powders produced from organic wastes such as skin, pulp, kernels, etc. of food materials and the isolation of biocompounds such as starch, cellulose, pectin and lignin, have potential for the development of new bio-composite food packaging materials as a supplementary agent and filler/additive material. In addition, it is also known that grape, orange, apple and pomegranate juice wastes are rich in phenolic compounds which exhibit anti-microbial and anti-oxidant properties, depending on the number and position of the hydroxyl groups in their structures. It is suggested that the usage of these waste materials, which have a low economic value mostly used as animal feed, in the development of active and bio-degradable bio-composite packaging materials add value to waste materials. Biodegradable packages also help to decrease environmental pollution problems and food safety. This study aims to (i) the development of active and bio-degradable bio-composite packaging materials (ii) investigate the potential usage of wastes gained from fruit juice processing factories, and (iii) compare the mechanical, thermal and gaseous barrier properties of these materials with synthetic plastics.

Keywords: Bio-composite, active packaging, fruit juice waste, bio-degradable



Modeling Seasonal Variations of Soil CO₂ emissions from an Orchard Plantation Under a Semi-Arid Area

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Abstract

CO₂ emission from soil have a significant impact on the carbon balance in the atmosphere. Measuring and modeling soil CO₂ emissions under different soil types and crop managements are thus vital for mitigating this impact and environmental management. Soil CO₂ emissions were measured from apricot orchard at two different locations; under crown of tree (UC) and between rows (BR) and one measurement was performed from bare soil (BS) located next to the orchard for comparison purpose. Measurements were performed weekly from 2008 to 2016. Soil CO₂ emissions were related with some environmental variables such as air temperature, soil temperature at different depths, soil moisture, rainfall and relative humidity. Two different methods; Generalized Linear Model (GLM) and Artificial Neural Network (ANN) were used for modeling long term seasonal variations using environmental parameters and two methods for compared for their performance. Before modeling, the data was randomly splitted into two parts; one for calibration data and second for validation data with varying number of samples in each. Performances of the models were evaluated using RMSEP values. UC, BR and BS ranged from 11 to 3985, from 9 to 2365 and from 8 to 1722 kg/ha/week, respectively. Soil CO₂ emissions had statistically significant correlations ($p < 0.05$) with some environmental variables. The results showed that GLM overperformed ANN whereas as the number of samples in calibration data set and the number of environmental variables used in modeling were decreased, ANN models seemed to be more advantageous over GLM models providing a better fit between actual observations and predictions in validation data set and lower RMSEP values. In the case of ANN modeling, the selection of the right number of neurons used in the modeling was important. Overall the results showed that the success of environmental variables for estimations of CO₂ emissions was moderate.

Keywords: Soil CO₂ emissions, modeling, Harran Plain, Environmental variables

Phenotyping of Vancomycin Resistance Genes and Detection of Some Virulence Traits in Enterococci Strains Originated From Chicken Meat

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Abstract

The present study was conducted to determine the contamination with vancomycin resistant/susceptible enterococci (VRE) of chicken meat samples at the retail level in South Marmara Region and also the presence of vancomycin resistance phenotyping genes and some virulence traits genes in possible isolates. For this purpose, enterococci isolation was made from 75 chicken meats using enterococci specific medium supplemented with vancomycin and then identified by Polymerase Chain Reaction (PCR) method. The presence of *vanA*, *vanB*, *vanC* vancomycin resistance genes and *gelE*, *agg*, *esp*, *ace*, *efa_{fm}* (only in *E. faecium* strains) virulence genes were searched by using PCR technique. While VRE was found in 6.6 % (2 *E. faecium*, 2 *E. durans* and 1 *E. gallinarum*) of the samples, enterococci isolation was determined as 20 %. A total of 6 strains, 4 of which were VRE, were observed to harbor *vanA* gene, *vanC* gene was detected in 1 strain of VRE and 6 strains of vancomycin susceptible enterococci. On the other hand, none of the isolates had the gene belonging to *vanB* phenotype and genes associated with studied virulence traits. The presence of *vanA* gene in chicken meat was particular attention, because this resistance phenotype has been isolated most frequently in human infections and has transmitting ability to other strains and bacteria. For this reason although there was no virulence gene, that strains isolated may pose a risk for public health due to cross contamination during slaughter, packaging, processing and cooking steps.

Keywords: Enterococci, Virulence genes, *VanA*, *VanC*, Chicken meat

Effects of Cover Crops on Some Soil Chemical Quality parameters in a Apricot Orchard

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Abstract

Turkey, which is in the first place in wet and dry apricot production in the world, has a great potential in terms of production areas. There are many factors affecting fertility in apricot Orchard, one of the most important of which is soil quality. In order to maintain the quality of the soil and obtain high yield, the organic matter content of the soil should be increased. For this purpose, cover crops have an important role in the success of organic production systems. This study was conducted to determine the effect of different cover crops as a source of organic matter on some chemical quality parameters of soil. For this purpose, in the apricot orchard with clay loam structure was used *Vicia villosa* Roth., *Vicia pannonica* Crantz, *Vicia pannonica* Crantz and Tritikale mixture (70%+30%), *Phacelia tanacetifolia* Benth., *Fagopyrum esculentum* Moench. In addition, the experiment was established a randomized complete block design with four replications including mechanical, herbicide and control plots. Soil samples were taken from 0–20 cm and 20-40 cm depth in each plot. According to the results obtained, the cover crops improved some soil chemical properties such as; organic matter (OM), total N, pH, EC, available P, exchangeable K, Ca, Mg and Na. While pH contents, exchangeable Na and Ca of soils decreased, OM, total N, EC, available P, exchangeable K increased according to the control with cover crops applications. The highest OM values determined at 0-20 cm soil depth were found as follows; *Vicia villosa* Roth.> *Vicia pannonica* Crantz> *Vicia pannonica* Crantz and Tritikale mixture> *Fagopyrum esculentum* Moench.> *Phacelia tanacetifolia* Benth.> mechanical> control> herbicide applications. The highest correlations among the chemical properties obtained for the *Vicia villosa* Roth. were found between OM and total N (0.986**), OM and EC (0.932**), pH and OM (-0.952**).

Keywords: Cover crops, Soil chemical quality, Apricot

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Serum YKL-40, suPAR, Fas-L and Cyct C Levels in Rats Fed with Western Diet (High Fat-High Sucrose Diet)

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Abstract

Programmed cell death, called as an apoptosis, is responsible for useless or unwanted cells, canalization of ducts, formation of digit etc. But necrosis is an accidental cell death causing inflammation. There is an interaction apoptosis and inflammation. Moreover high dietary sugar increase inflammatory markers also high fatty diets disrupts immune function. In this study we aimed to investigate how the levels of apoptotic and inflammation markers in blood of rats fed with Western diet (including high sugar and high fat) are affected. For this purpose male Wistar rats, weighing 350 ± 30 g and aged 10-12 weeks, were separated four groups. Rats in control group were fed with standart diet and the other rats were fed either a fat diet containing 35% fat or high-sucrose diet with 100% sucrose of carbohydrate-derived energy content or a Western diet containig both two types of diets for four weeks. After application, the animals were sacrificed by servical dislocation under anesthesia and blood was taken from cardiac puncture and transferred to EDTA tubes. The serume soluble urokinase plasminogen activator receptor (suPAR), chitinase 3-like protein 1 (YKL-40), Fas ligand and Cytochrome c levels were measured by using ELISA method. At the end of the study, only a statistically significant increase in YKL-40 level was observed in rats fed Western diet, but no difference was observed in suPAR levels. In apoptotic marker levels it was observed an increase but not statistically significant just in rats fed with Western diet. Obtained findings show that in people who maintain dietary habits with Western diet can not only occur inflammation but also be observed apoptosis if this condition sustained.

Keywords: Cytochrome c, chitinase 3-like protein, Fas ligand, soluble urokinase plasminogen activator receptor, Western diet



Western Diet (High Fat-High Sucrose Diet) Induces Endogenous Oxidative DNA Damage in Rats

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Abstract

Western diet, with its two major components being excess fat and excess sugar, is a preferred diet for many people in developed and developing countries. Many studies have reported that obesity, hyperlipidemia and hypertension are observed in people sustaining lifestyle with this diet, and as a result, the way of life maintained in this way is closely related to cancer risk factors. In this study, it was aimed to investigate whether Western diet produced endogenous oxidative DNA damage and how the level of poly (adenosine diphosphate [ADP] -ribose) polymerase (PARP) enzyme, responsible for repairing this damage, was affected. For this purpose male Wistar rats, aged 10-12 weeks, were separated four groups. Rats in control group were fed with standart diet and the other rats were fed either a fat diet containing 35% fat or high-sucrose diet with 100% sucrose of carbohydrate-derived energy content or a Western diet containig both two types of diets for four weeks. After application, the animals were sacrificed by servical dislocation under anesthesia and blood was taken from cardiac puncture and transferred to EDTA tubes. The serume 8-hydroxy-2-deoxyguanosine (8-OHdG), oxidative DNA damage marker, and PARP levels were measured by using ELISA method. At the end of the study, no changes were observed in the parameters examined in rats fed only with high sucrose or only high fat diet. Whereas a statistically significant increase in both serum 8-OHdG and PARP levels was found in rats fed Western diet. These findings indicate that Western diet causes endogenous oxidative DNA damage. We believe that the findings obtained will present new approaches to the pathophysiology of diseases accompanied by this type of diet and that the formation of various forms of cancer may be triggered if such nutrition is sustained in those who continue their lives in this way.

Keywords: Endogenous oxidative DNA damage, 8-OHdG, PARP, Western diet

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The Effects of the Usage of β -Glycosidase Enzyme on the Aroma of Fruit Juice Obtained from Kozan Muscatel Orange

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Abstract

Appearance, color, taste and aroma features of foods have a significant impact on the consumers' understanding of "quality". "Aroma" has a distinctive place among those features. Some certain technological applications on the fruits may change the natural aroma of the products. Enzyme applications is one of these technological applications. This study aims to research the effects of the usage of β -Glycosidase Enzyme on the aroma of fruit juice obtained from Kozan Muscatel orange. The extraction of free-aroma compounds was carried out liquid-liquid extraction method, whereas the extraction of bounded aroma compounds was performed through solid-phase extraction. GC-FID and GC-MS techniques were used to calculate and identify the quantity of aroma substances in orange juice. According to the evidences, while control sample has 110 aroma compounds, the sample which has gone through an enzyme application is found to have 113 aroma compounds. Total amount of 40 bounded aroma substances is identified in the both samples. As for free-aroma compounds, it is seen that enzyme application has an impact on transforming bounded aroma into a free condition. Additionally, the samples of orange juice were evaluated in terms of its sensual qualifications. Consequently, the orange juice samples which has gone through an enzyme process found to have highest ranks.

Keywords: Orange, Juice, Aroma, β -Glycosidase



Determination of Glycosidically Bound Aroma Compounds of Tokaloglu Apricot Grown in Malatya by Solid Phase Extraction and GC-MS-FID Technique*

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Abstract

Natural aroma of fruits which have rich glycosidically bound aroma compounds can be enhanced by some technological process. However, potential of bound aroma of fruit variety must be known. This study aims to investigate bound aroma composition of Tokaloglu variety of apricot which is grown in Malatya province of Turkey. Bound aroma compounds from apricot were extracted by using RP-18 cartridge through solid phase extraction method. The hydrolysis of glycosides in extract was performed enzymatically so as to release bound aroma compounds. Identification and quantification of bound aroma compounds were carried out using internal standard method by GC-MS-FID technique. According to results, in Tokaloglu apricot, 8 norisoprenoids, 9 terpenes, 2 volatile phenols and 2 higher alcohols were identified. Total amount of these compounds was 1558.47 µg/kg. Norisoprenoids (819.03 µg/kg) were the most dominant bound aroma compound followed by higher alcohols (477.80 µg/kg), terpenes (218.27 µg/kg) and volatile phenols (43.37 µg/kg). Amounts of β-ionone, linalool, and eugenol were found above their odor threshold value. Consequently, Tokaloglu apricot was found to have a great bound aroma potential.

Keywords: Apricot, Tokaloglu, Bound aroma, GC-MS-FID

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The Effects of Different Commercial Yeasts on the General Compounds of Wines Made of Okuzgozu Variety

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Abstract

This study aims at determining the effects of commercial yeasts on the general compound of wines produced from Okuzgozu grapes –which is one of the most important red wine grapes in Turkey. The production of wines was performed by using one spontaneous and two different commercial yeasts. Alcohol, general acidity, pH, volatile acidity, free Sulphur dioxide, total sugar, intensity, total dry matter and ash analyses have been conducted to identify general compound featured of the wines. Alcohol content of the wines differed between %15.2-15.5, while volatile acid content was found between 0.4-0.49 g/l in acidic acid. Total sugar content and total dry matter were found between 2.7-6 g/l and 18.2-22.7 g/l, respectively. General compound of the wines did not significantly affected by commercial yeast application. However, this process decreased the amount of volatile acid content in the wines- which is deemed as a defect in general.

Keywords: Okuzgozu, Wine, Yeast, General compounds

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Determination of the Aroma-Active Components in Foods through Using Gas Chromatography-Olfactometry Methods

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Abstract

It is a widely accepted fact that food taste largely formed by aroma compounds reaching odor receptors on nasal passage from mouth cavity. Despite food products have hundreds of aroma substances, few are able to contribute significantly to the characteristic aroma of that product, thereby to the taste of it. Those components which are responsible for forming that characteristic aroma are called “aroma-active components”. In recent years, the advancement in analyze techniques have revealed an increase in the identification of volatile components in food stuff. Today, aroma substances can be identified and measured through using gas chromatography (GC) and GC-mass spectrometer (MS) systems. On the other hand, aroma-active components which forms character of the food are identified by using GC-Olfactometry (GC-O) technique. Gas chromatography- olfactometry technique can be performed through four different methods: dilution analyze methods; detection frequency methods; posterior intensity methods; and time-intensity methods. In this compilation, these four different GC-O methods –utilized to determine aroma-active components which are one of the characteristic feature of foods- have been focused on, and prevailing features of it were evaluated through revealing its advantages as well as disadvantages.

Keywords: Food, Aroma-Active, Methods, GC-O

The Effect of Thyme (*Thymbra spicata* L. var. *spicata*) Essential Oil on Performance and Intestinal Microflora of Japanese Quail Fed In Various Stocking Densities

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Abstract

This study was conducted to determine the effect of the Thyme (*Thymbra spicata* L. var. *spicata*) essential oil (TEO) on the performance and intestinal microflora of Japanese Quail fed in various stocking densities. Material and Methods: In the study, A total of 300 Japanese quail (*Coturnix coturnix japonica*) chicks were used at the age of 7 days, which were selected for live weight and the trial was lasted at 28 days. Experimental groups were designed as the group was received basal diet at optimal stocking density (160 cm²/chicks, OSD-CONT), the group was received basal diet at high stocking density (90 cm²/chicks, HSD-CONT), the group was received basal diet plus at 10mg/kg Avilamycine at high stocking density (HSD-ANT), the group was received basal diet plus at 200 (HSD-T1), 400 (HSD-T2) and 600mg/kg zahter (*Thymbra spicata* L. var. *Spicata*) essential oil (HSD-T3) at high stocking density, respectively. Each group consisted of 5 replicas and 50 chicks. Results: High stocking density (90 cm²/chicks) adversely effected animal performance by increasing stress. On the other hand, adwers effects of stress caused by high stocking density have decreased in all of the groups to which different doses of volatile oil are administered. It was determined that total bacteri count, coliform and lactobacilli numbers were significantly depressed by increasing doses of zahter essential oil (P<0.001). Discussion and Conclusion: Addition of zahter essential oil into the Japanese quail's diets at high stocking was providen improvement in different levels. It was determined that zahter essential oil at 600mg/kg level may be more effective in mitigation of adwers effects caused by high stocking density.

Keywords: Japanese quail, stocking density, thyme essential oil, intestinal microflora.

Efficacy of Chemical and Physical Seed Treatments on Tomato Bacterial Speck Disease Management

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Abstract

Tomato bacterial speck caused by *Pseudomonas syringae* pv. *tomato* reduces yield and marketable tomatoes. The pathogenic bacterium leads to significant tomato losses in nurseries, commercial greenhouses and fields. The pathogen is seedborne, that's why, seeds are the primary inoculum source for pathogen contamination. The aim of this study was to evaluate the efficacy of twelve chemical (copper acetate sodium hypochloride (NAOCI) and streptomycine sulphate) and physical (hot water) seed treatments on disease incidence, disease severity and seed germination of tomatoes in chamber room conditions. In the study, artificially contaminated tomato seeds (cv. H-2274) were dipped into 2 and 3% sodium hypochloride during one, three or five minutes, 0.1 and 0.2% copper acetate for one and three minutes, 200 ppm streptomycin sulphate for five minutes and hot water at 50°C during thirty minutes, separately. Seed treatments reduced disease incidence and severity between 60-100% and between 58-100%, respectively, and the germination of contaminated seeds were ranged from 70-92%, individually. In this trial, hot water treatment has efficiently eliminated the pathogen inoculum from seeds. As a second trial, NaOCI (2%) and copper acetate (0.2%) were combined to enhance the success of the seed treatments in eliminating pathogen inoculum on/in seeds. Combinations of chemicals reduced disease development and severity up to 92-100% and 96-100%, respectively. The study suggested that treatment of tomato seeds with hot water at 50°C for 30 min or combinations of NaOCI (2%) for 5 min with copper acetate (0.2%) during 3 minutes should be included into tomato bacterial speck disease management in seed companies and nurseries. This study was partially supported by Erciyes University Scientific Researches Unit with a grant number FBA-2016-6457.

Keywords: tomato, seed treatment, *Pseudomonas syringae* pv. *Tomato*

Groundwater Modelling in Agricultural Basins with FREEWAT Modelling Environment: Palas Basin Case Study

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Abstract

Palas Basin (Kayseri, Turkey) is an agricultural basin, where both surface water and groundwater are used for irrigation. In recent years, groundwater levels went down and groundwater quality deteriorated due to intensification of agriculture. Palas Basin also hosts an ecologically-important wetland ecosystem, called Tuzla Lake. Tuzla Lake is fed by surface and groundwater flows, therefore has been affected negatively by the changes in the basin. In this study, a groundwater model was developed for Palas Basin using the FREEWAT platform. FREEWAT (FREE and open source software tools for WATER resource management) is a modeling platform developed under a HORIZON 2020 project that aims at promoting water resources management by means of innovative GIS integrated open source and public domain ICT simulation tools. The FREEWAT platform is based on the groundwater models (i.e., MODFLOW) and has been integrated as plugin into the open-source QGIS program. In this study, we simulated the groundwater component of the hydrologic system in the Palas Basin. The linkage between surface water and groundwater was examined and the effects of agricultural practices were discussed.

Keywords: FREEWAT, groundwater modeling, participatory approach, Palas Basin.

Acknowledgment: This paper is presented within the framework of the project FREEWAT, which has received funding from the European Union's HORIZON 2020 research and innovation programme under Grant Agreement n. 642224.

Artificial Neural Network Modeling of Long Term Seasonal Soil CO₂ Emissions

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Abstract

CO₂ emissions from soils is a part of carbon balance in the atmosphere and it occurs as a result of root and microorganism activities in soil. The amount of soil CO₂ emissions released to the atmosphere are highly depend on soil and crop management and climate. Measuring the amount of soil CO₂ emission under different crop patterns and relating it to the climate parameters can help better understanding the main mechanisms controlling its magnitude and mitigating its releasement to the atmosphere. The measurements of soil CO₂ emissions in an apple orchard located in the Harran Plain, Southeastern Turkey were performed weekly during two years period (2008-2010) from both underneath of crown of the trees (CO₂_UC) and also between rows of the trees (CO₂_BR) according to soda lime technique. Artificial Neural Network (ANN) method was used for modeling long term seasonal variations in soil CO₂ emissions using various climate parameters and soil moisture. Various ANN models were developed using different set of hidden and neuron numbers and the performance of the each model was evaluated using a seperate test data set by splitting the data set randomly in to two parts; one was used as calibration where model was developed and the second is test data set where the model performance was tested. The selection of the best model with right number of hidden layer and the number of neurons that gives the lowest Mean Square Error of estimation (MSE) value was achived using cross validation approach. CO₂_UC and CO₂_BR ranged from 75 to 835, and from 88 to 4519 kg/ha/week, respectively. Preliminary results showed that future estimations of soil CO₂ emissions using ANN method and climate parameters were moderately successful. The best number of neurons providing the lowest MSE values were 5 and 32 for testing and training, respectively.

Keywords: Harran Plain, soil CO₂ emissions, ANN modeling, climate parameters

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Temperature Effect on Some Surface Properties of Brij 35 and Tetradecyltrimethyl-Ammonium Systems

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Abstract

The importance of surfactants in various applications such as agriculture, water treatment, oil recovery, cosmetics, pharmaceutical, food, detergency, wetting and micellar solubilisation. Surfactants used in various practical and commercial applications are invariably mixtures. Studies involving the investigation of various physico-chemical properties of mixed surfactants have proved to be a powerful technique to optimize their properties to desired ranges by just changing the solution composition. Wetting of solid surfaces has been a topic of immense interest since last few decades keeping in view of the wide ranges of applications. It refers to a phenomenon involving spreading of a liquid layer on a solid surface resulting from simultaneous action of interfacial forces between solid, liquid and gas phase. The nonionic surfactant used in this study are Brij 35 (Polyoxyethylene (23) lauryl ether), also TTAB (Tetradecyl trimethyl ammonium bromide) as cationic surfactant were used. The critical micelle concentration (CMC) of aqueous solutions and the individual surfactants and CMC of TTAB / Brij 35 mixing cationic nonionic surfactant systems by measuring contact angle are determined at different proportions and different temperature range (from 20 to 70 °C). TTAB / Brij 35 mixing cationic nonionic surfactant systems at different temperature using conductometric method. .

Keywords: Contact angle, Critic micelle concentration, Nonionic surfactant and Cationic surfactants.



In vitro propagation of endemic *Centaurea amaena* Boiss. & Balansa

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Abstract

Centaurea amaena Boiss. & Balansa is a critically endangered endemic species according to the criteria specified by IUCN. Recently, tissue culture techniques have efficiently been employed in conservation of endemic and endangered species. Therefore, the present study was conducted for in vitro propagation of endemic *Centaurea amaena*, which can be a valuable technique for germplasm conservation of this species. For this purpose, cotyledon node explants were isolated from 15-20 days old seedlings and cultured on Murashige and Skoog (MS) media supplemented with various concentrations of 6-benzylaminopurine (BAP) and α -naphthalenacetic acid (NAA). The greatest number of shoots per explant was obtained from 2 mg/l BAP. Regenerated shoots were rooted in half-strength MS medium containing 1 mg/l indole-butyric acid (IBA).

Keywords: *Centaurea amaena*, In vitro propagation

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The Effectes on Chlorophyll Content and Leaf Area Index of Application of Humic Acid, Microbial Fertilizer, and Phosphate Rock in Bean Cultivation

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Abstract

This research was carried out at the central campus sites of Erciyes University Agricultural Research and Application Center during the growing period of 2015 in order to determine the effects on chlorophyll content and leaf area index the on pod formation time of the application of humic acid, microbial fertilizer and phosphate rock in bean cultivation. Experiments were conducted in randomized blocks split-split plots experimental design with 4 replications. Humic acid was applied to main plots as to have 2 kg humic acid per decare; *Bacillus pumilus* C26 phosphate solving microbial fertilizer applied to subplots; and phosphate rock (%29.3 P₂O₅) was applied to sub-subplots as to have 0, 7.5, 15 and 22.5 kg P₂O₅ per decare. The application of humic acid, microbial fertilizer and phosphate rock to bean plants increased chlorophyll content and leaf area index.

Keywords: Bean, humic acid, microbial fertilizer, phosphate rock, chlorophyll, leaf area index

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Perceptions of Teacher Candidates on the Concept of Soil

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Abstract

The soil, is the living and unique natural capital of the world that all the terrestrial life depends on, in the context of the material and spiritual value it carries. At this point, the main purpose of this study is to reveal the perceptions of teacher candidates who are in the position of the cogwheel on education regarding the understanding of the importance and value of the soil and the formation of the soil consciousness. In this paper, a case study was used in order to reveal the perceptions and to try to explain the specific phenomenon by deeply examining the special case belonging to a certain phenomenon and the qualitative characteristics of the qualitative research methods. The case study as a type of qualitative research methods was used in this research because it provides the detection of perceptions and has the characteristics of trying to explain a phenomenon by examining in detail the special case belonging to a particular phenomenon. In order to determine the study group - in the context of research design - purposeful sampling has been preferred to obtain more detailed data to this purpose. For this reason, teacher candidates who have received all of the courses such as environmental sciences, general biology and geography during the undergraduate education have been preferred for this research. The study group of this research consists of a total of 45 teacher candidates who are studying at the 4th Grade of a university in the Western Black Sea Region. Semi-structured interview technique was used for the collection of research data. In this regard, a semi-structured interview form which was validated and credible, supported by probes and composed of a single key question (what kind of thoughts come in your mind when the term "soil" is mentioned?) has been prepared. Data collected in the study were analysed using "content analysis" technique, one of the qualitative study analysis methods. Firstly, the grouped data based on the research question were read and the nature and general appearance of the data were presented. In the findings obtained, it was observed that the perceptions of teacher candidates were collected under two main themes; Agriculture and Food, Death and Homeland. Under the agriculture and food theme, the teacher candidates indicated that they considered the vegetable and fruit production and nutrition concept as the main point in the context of production, and stated that they are the living environment for many living things. It has been observed that prospective teachers refer specifically to the concept of death as the place where death and life end. In the affective sense, while students describe the earth as peaceful and joyful, they also pointed to the importance of maintaining the continuity of life, the sustainability of the planet and the many biologic loops in cognitive sense. Another noteworthy point is that prospective teachers identify the concept of soil with the homeland as a sacred being, and evaluate it with a national and moralistic point of view. It has been observed that teacher candidates express their feelings with a sincere approach, especially using concepts such as the country, as well as their tendency to respect the soil, and this was reported as the most significant finding of the research that it was the greatest gain for a prospective teacher who is senior student.

Keywords: Soil consciousness, soil perception, agriculture and food, teacher candidates

The Analysis of Teacher Candidates' Cognitive Structure Regarding Socio-scientific Issues in Biology: Word Association Test (WAT) Study

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Abstract

The aim of the present study is to analyze the cognitive structure of science and technology teacher candidates in the debated issues of biology through word association. In accordance with this purpose argumentative style courses were done in 2016-2017 fall academical year with 30 fourth grade candidate teachers studying at Science teaching department at a university in Western Black Sea region for 2 ours in 14 weeks within Special Issues in Biology course about socio-scientific issues. Case study, a method of qualitative ressearch, was used as it has a wholistic approach, and it provides the perception to be realized and supplies the flexibility of research design. In order to determine the perception structure of teacher candidates as to biological socio-scientific issues the WAT was used. Ten key concepts namely alternative medicine, halal food, food allergy, food additives, convenience food, genetically modified organisms (GMO), bio-diversity, bio-smuggling, food security, regarded as socio-scientific issues in biology are chosen to form the WAT. In the application, teacher candidates are asked to write down the related concepts in 30 seconds for each of the concepts. The data gathered analyzed in the context of concept networks, which reveal the relationship among concepts in cognitive structure, number and quality of answer vocabularies taken from frequency tables. It was observed that the concepts of halal food, food allergy and biomimetry are interestingly comes 20-24 interval, the first relation of halal food is with pork, food allergy is with shock, rash and diary products. In 15-16 interval the concepts of bio-diversity, GMO and food additives are included into the scheme and the vocabulary of tomatoes is related with GMO and bio-diversity is with plant. When the general scheme is taken into consideration, it can be said that all the key vocabularies occur in 5-9 interval and the fewness of the relations among the key concepts stand out.

Keywords: WAT, teacher candidates, cognitive structure, biological socio-scientific issues, agriculture and food

Pamukta (*Gossypium Spp.*) Anter Kültürünü Etkileyen Faktörlerin İncelenmesi

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Özet

Anter kültürü esas olarak; içerisinde olgunlaşmamış mikrosporları bulunduran anterlerin pamuk tomurcuklarından ayrılarak *in vitro* koşullarda kültüre alınması, embriyoidleri verebilecek kallusların oluşması ve oluşan embriyoidlerin olgunlaşp embriyoların elde edilmesidir. Çalışmanın amacı pamukta anter kültürü tekniğini kullanarak olgunlaşmamış taraklardan alınacak anterlerin uygun besi ortamlarında kültüre alınması ve embriyoların elde edilip sürgün oluşumunun sağlanmasıdır. Üç farklı pamuk çeşidi, Aşkabat-100 (*Gossypium barbadense* L.), Coker-312 ve Stoneville-468 (*Gossypium hirsutum* L.)’den alınan taraklar kallus indüksiyonu için çalışılmıştır. Araştırmada farklı boylardaki olgunlaşmamış çiçek tomurcuklarından alınan pamuk anterleri (2, 3, 4 ve 5 mm) kullanılmıştır. Aseptik koşullarda anterler yüzey sterilizasyonuna tabi tutulduktan sonra, anterlerdeki olgunlaşmamış mikrospolar, izole edilerek kallus indüksiyonu için bitki büyüme düzenleyicisi içeren besi ortamlarına aktarılmıştır. Anter kültürü çalışmalarında MS (Murashige Skoog) besi ortamında oksinin ve sitokinin türevlerinin farklı konsantrasyonlarının interaksyonları incelenmiştir. Aşkabat-100 çeşidinde farklı uzunluktaki anterlerde en yüksek oranda embriyoid kallus 2 mm uzunlukta (97.00), Stoneville-468 çeşidinde en yüksek 5 mm uzunlukta (72.63), Coker-312 çeşidindeki anterlerde en yüksek embriyoid kallus oluşumu 3 mm anter uzunluğunda (55.80), başlatılan kültürlerde elde edilmiştir. Çalışma sonucunda, Aşkabat-100 çeşidi embriyoid kallus, embriyoid ve embriyo oluşumu için en uygun sonuçları vermiştir. Daha sonra embriyoya dönüşen embriyoid kalluslar için en iyi değerler, hormonsuz (90.73) 0.1-0.5 mg/l kinetin ilaveli (76.00-61.60) ve 2.0 mg/l 2,4-D ilaveli (97.00), ortamlarda ölçülmüştür. En yüksek embriyo ve sürgün oluşumu (66.47) 0.5 mg/l kinetin içeren besi ortamında gerçekleşmiştir. Embriyonun globüler, kalp, torpedo ve kotiledon evrelerine ait görüntüler elde edilmiştir. Daha sonra embriyolar olgunlaşmış, çimlenme meydana gelmiştir ve 0.5-10 cm uzunluklarında sürgün elde edilmiştir. Fakat sürgünler tam bir bitkiciğe dönüşemediğinden, hedeflendiği gibi sonuçlar elde edilememiştir.

Anahtar Kelimeler: Pamuk, Doku Kültürü, Haploit, Anter ve Kall

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Genetic Relationships of Ornamental Pumpkins (*Cucurbita pepo* var. *ovifera*) Originated from Turkey Based on Molecular ISSR Method

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Abstract

The Cucurbitaceae family, also known as cucurbits consist approximately 130 genera and 800 species and generally grown in warmer region of worldwide and includes squashes, pumpkins, melons and gourds. *Cucurbita pepo* var. *ovifera* is one of the member of this large family and mainly cultivated for ornamental uses due to different and interesting shapes. In this study, molecular properties of 37 *Cucurbita pepo* var. *ovifera* genotypes from different part of Turkey were determined. Genetic diversity among populations was determined using ISSR molecular markers. There was high rate of morphological diversity among the ornamental pumpkin genotypes. Fifteen ISSR primers produced, on average, 81 bands in the accessions examined, of which 70 (86, 5 %) were polymorphic. The number of amplications per accession varied from 3 to 12, where sizes ranged between 100 bp and 1400 bp. Molecular analyses of among the 37 genotypes were carried out using NTSYS-pc (Numerical Taxonomy Multivariate Analysis System, NTSYS-pc version 2.11, Exeter Software, and Setauket, N.Y., USA) program. Dice similarity coefficient ranged from 0.50 to 0.96. Genotype which is farthest from the other genotypes of the difference was determined to be 17th genotypes.

Keywords: *Cucurbita pepo* var. *ovifera*, ornamental pumpkin, ISSR



Simultaneous Screening of Total Aflatoxins (B₁, B₂, G₁, G₂) and Ochratoxin A (OTA) in Coffee Samples

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Abstract

The aim of this survey was to determine the occurrence of total aflatoxins (B₁, B₂, G₁, G₂) and ochratoxin A (OTA) from different coffee brands and types in Southeastern region of Turkey. Total aflatoxins and OTA were microbiologically detected by solid phase direct ELISA. The survey included 90 coffee samples. Survey results demonstrated that 39 (43%) were positive for the presence for total aflatoxins and 36 (%40) out of the 90 samples were positive for the presence of OTA. The mean relative humidity level in coffee samples was 5.35. The results of this study have shown the significance of government control programs in coffee production and sale.

Keywords: Coffee, ELISA, Ochratoxin A, Total Aflatoxins

Application an Experimental Design Methodology to Copper Removal from Wastewater Using a Green and Economical Sorbent

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Abstract

Increased industrial activity has led to environment contamination by various harmful components due to without strict control of waste quality. As is well known, copper is one of the most common pollutants in environment especially for water and industrial wastewater, and due to their non-biodegradable, toxic affect. When these metals accumulate in the environment they can lead to serious health problems. Heavy metals pollution especially copper spreads ground water and over earth. They come from different natural activities and industrial effluents. If they transported into ecosystem, especially marine animals can be easily adsorbed and when directly enter human food chains leads to serious health risks for consumers. They may cause serious health problem including liver, brain, dysfunction of the kidney, reproductive system besides central nervous system. In this study, the sorption of copper(II) ions on astragalus, a green adsorbent, was investigated in a batch system. The effects of operating parameters including pH, contact time, adsorbent dosage on the copper(II) sorption were analysed using response surface methodology (RSM). The proposed quadratic model for Box-Bohnken design fitted very well to the experimental data that it could be used to navigate the design space according to ANOVA results. The optimum copper adsorption conditions were identified as pH 5.36, contact time 178 min and adsorbent dosage 1 g. The maximum monolayer coverage capacity of astragalus for copper(II) ions was found to be 1.52 mg g⁻¹ under optimal conditions.

Keywords: Copper, astragalus, experimental design methodology

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The Efficiency of Mycorrhizal Fungi on *Fusarium oxysporum* f.sp *vasinfectum* Crown and Root Rot Diseases of Peppers in the GAP Region*

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Abstract

In our country, pepper (*Capsicum annuum* L.), are produced in two ways; field cultivation and greenhouse. The most common diseases in pepper cultivated areas causing declines in quality, dryness of the crop is crown and root rot disease, and it usually occurs during the growth of the plants in the field. Over time, wilt, yellowing and drying in the plants are observed. From these soilborne fungal diseases, *Fusarium* species were commonly existed ones in our survey study in Southeastern Anatolia Region (GAP) where this research was performed. In this research; the effectiveness of Mycorrhizal Fungi of *Glomus mosseae* (GM), *G. intraradices* (GI), *G. etunicatum* (GE) and Mycorrhizal Mix (MM-mix of three kinds of this Mycorrhizal Fungi) that are obtained from Yuzuncuyil University against *Fusarium oxysporum* f.sp *vasinfectum* (Fov) were tested over Inan-3363 registered pepper variety belong to GAP Agricultural Research Institute (GAPTAEM) in the climate room 25 ±1 temperature and 60 % humidity as three replications during growing season 2016. Two isolates of *F. oxysporum* f.sp *vasinfectum*, showing different morphological structures collected from different provinces of grown peppers in the GAP Region, were used as disease pathogen. Molecular analyses of these isolates whose morphological diagnoses were performed were made. Clox 1-2 primer, Fov1-2 primer and Fov1 egf-r primers were used respectively for *Fusarium oxysporum*, *F.oxysporum* f.sp *vasinfectum* . In this study, the effect of Mycorrhizal Fungi on the growth of plants and disease were investigated, and their effectiveness were evaluated by analysing quality parameters such as, plant height, number of leaves, wet weight and dry weight of green parts, root length, root fresh and dry weight, stem diameter, root colonization, disease severity and total spor counting in soil, soil nutrients, EC, pH.

Keywords: Pepper, *Fusarium oxysporum* f.sp *vasinfectum* (Fov), Crown and Root rot, Mycorrhiza, *Glomus mosseae* (G.M.), *Glomus intraradices* (G.İ.), *Glomus etunicatum* (G.E.), Biological control, GAP Region.

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Removal of Methylene Blue by Using Potassium Hydroxide (KOH) Modified Apricot Kernel Shells

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Abstract

In this study, the removal of methylene blue from aqueous solutions was investigated by using apricot kernel shells modified with potassium hydroxide (AKS). Raw apricot kernel shells were washed with distilled water and dried (105 °C, 24 hours) which was followed by grinding and sieving until getting 1-2 mm particle size. Potassium hydroxide was added to water in a ratio of 1:1 and then mixed with apricot kernel shells for 24 hours. After mixing process, rewashing was applied with distilled water and 0.1 N hydrochloric acid until pH 6.5 was obtained and then again drying was applied. For adsorption experiments, 0.2 g AKS was added to 50 mg/L methylene blue solutions and removal efficiencies were determined in six-hour periods. For the first four hours, as a result of rapid diffusion of dye molecules on the surface of adsorbent, removal efficiency increased rapidly and reached to a value of 83%. Depending on the decrease of reachable sites on the adsorbent surface, the rate of removal of dye molecules decreased. At end of the fifth hour, 87% removal efficiency was obtained and there was no significant change in the removal efficiency due to equilibrium of the system. In this equilibrium phase between adsorbent material and dye molecules, it was determined that the capacity of the adsorbent was found as 22 mg methylene blue dye/g adsorbent. Since methylene blue has a cationic structure, modification of adsorbent material with a base significantly improved its adsorption capacity when compared to other studies in literature. The time for the equilibrium of the system was longer than other studies and this was due to comparatively bigger particle size of the adsorbent (1-2 mm) and no heating stage during modification process. The results indicated that apricot kernel shells can be effectively used for the removal of methylene blue dye from aqueous solutions.

Keywords: Adsorption, methylene blue, removal, apricot kernel shell.

The Evaluation of Drinking and Domestic Water Through Quality Parameter by Geography Information Systems (GIS) in Bilecik-Osmaneli Province

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Abstract

This study was carried out to evaluate the appropriateness of drinking and domestic waters according to the Regulation on Waters for Human Consumption in Turkey, Bilecik-Osmaneli district. In the study, according to the Provincial Public Health Directorate of Bursa Governorate from Bilecik-Osmaneli district, water samples (drinking and domestic water) on the date of 20.11.2013 in 9 different regions (pH, conductivity, oxidizability, ammonium, fluoride, chlorophyll) were taken from the glasses and village cafes in the villages (Selçik, Kızılöz, Ciciler, Ericek, Çerkeşli, Oğulpaşa, Adliye, Ağlan, Sarıyazı) The regulation was made according to the 'Regulation on Waters for Human Consumption', nitrite, nitrate, chloride, sulphate, selenium, arsenic, aluminum, boron, mercury, iron, chromium, lead, manganese, nickel, sodium. The distribution and mapping of the data were done in the GIS Mapping as spatial (Spline Interpolation) with support of Arc GIS 10.3.1 package software. As a result of the evaluation of the analysis on water samples taken from 9 different regions in the drinking and domestic waters of Osmaneli Province in 2013, the following findings are obtained; the pH values in drinking water of all the villagers in the province of Osmaneli are between 6.5-9.5, the conductivity values are lower than 2500 $\mu\text{S} / \text{cm}$, oxidizable values were found to be 5 mg / L, ammonium values of 0.03 mg / L, fluoride values of less than 1.5 mg / L, nitrite values of 0.03, nitrate values of less than 50 mg / L, chloride values of less than 250 mg / L, sulphate values of 250 mg / L' is small, selenium values of 4 $\mu\text{g} / \text{L}$, arsenic values of less than 10 $\mu\text{g} / \text{L}$, aluminum values of less than 200 $\mu\text{g} / \text{L}$, boron values of less than 1 mg / L, mercury values of 1 $\mu\text{g} / \text{L}$, iron values below 50 $\mu\text{g} / \text{L}$, lead values 2 $\mu\text{g} / \text{L}$, manganese values lower than 50 $\mu\text{g} / \text{L}$, nickel values lower than 20 $\mu\text{g} / \text{L}$, sodium values lower than 200 mg / L. It has been determined that the values of the villagers in the Osmaneli province are appropriate values according to the "Regulation on Waters for Human Consumption" because the values of the drinking and domestic waters are below the values in the regulation.

Keywords: Water Quality, Drinking and Domestic Water, GIS Mapping, Bilecik, Turkey

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Investigation of Drinking Water Quality of Adana and Trabzon Cities

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Abstract

In this study, the drinking and domestic water of Adana and Trabzon cities were investigated whether they are in accordance with the standards of TSE 266, World Health Organization (WHO), European Commission Standards and Regulation Concerning Water Intended for Human. Throughout this study, the data belonging to Adana Water and Sewerage Services as well as Trabzon Water and Sewerage Services of the year 2016 were used. As a result of the study, when pH, turbidity, total hardness, conductivity, alkalinity, residual chloride, iron (Fe), manganese (Mn), calcium (Ca), magnesium (Mg), aluminium (Al^{+3}), chloride (Cl⁻), copper (Cu), nitrate (NO₃), nitrite (NO₂), potassium (K), ammonium (NH₄⁺), fluoride (F⁻), sulphate (SO₄⁻²) parameters were taken into consideration for drinking as well as domestic water in Adana and Trabzon cities, it was determined that each of the parameters was found in accordance with the standards of WHO, TSE 266 and EC standards, at the desired levels for drinking water and at the levels which are not harmful for human health. It is necessary to carry out these investigations and evaluations regularly as well as to continue this treatment in accordance with the standards.

Keywords: Adana, Trabzon, Drinking water, Water Quality.

Determination of Watershed Land Use Type with Bayesian Network in Semi Arid Region

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Abstract

In recent years, experts are identified that climate change and global warming affects stream flow regime. These changes cause floods and erosion in creeks, streams, rivers etc. Especially in semi-arid watersheds, the structure of the land use type is an important factor in preventing possible disasters. The aim of this study is to determine watershed land use type by using hydro-morphological structure of stream and some physical water quality parameters. To do so, hydro-morphological observations and some physical water quality parameters are collected from 513 different sample points in Acicay watershed. Moreover, the most important 5 different factors that use to identify land use type are considered in this study. These factors are Rosgen stream type, salinity, sinuosity, channel material and stream slope respectively. Furthermore, these observations are analysed with Bayesian networks in order to predict the land use type. Four different scenarios are considered to see the changes in the type of the land use. Channel material is found to be an important parameter because it was effecting the land use in all scenarios. Also, Rosgen stream type was distinguishing parameter on predicting the agricultural land.

Keywords: Hydro-morphology, Watershed, Bayesian Neywork, Land Use Type, Semi Arid

Trend Analyses of Standardized Precipitation Index in Konya Endorheic Basin, Turkey

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Abstract

Studies that related to desertification become popular among natural scientists in Turkey. One of the most important factors for determination of the desertification is Standardized Precipitation Index (SPI). There are 5 different calculations in order to detect different type of drought which are 1, 3, 6, 9 and 12-24 month periods. Since 3-months SPI application is referenced for meteorological types of drought, we applied 3-months SPI to rainfall data. In this study, we consider non parametric trend technique Mann Kendall (MK) to detect seasonal periods across Konya Endorheic Basin. Based on the amount of rainfall data which is collected from 12 out of 51 stations for the time periods in the range of 39–52 years, SPI is calculated and MK is applied to the SPI data. The changes in the trend of SPI for each station are highlighted. The comments are made based on the trend of SPI of Konya Endorheic Basin.

Keywords: Standardized Precipitation Index, Desertification, Rainfall, Konya, Mann Kendall

The Importance of Soil Analysis in Protected Vegetable Production: The Case Study of Antalya Province, Kumluca District in Turkey

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Abstract

This study was carried out on the fertility analysis of the soil in the areas where the greenhouse cultivation was done intensively especially in the southern part of the Kumluca district of Antalya Province. Totally, greenhouse areas were selected randomly and soil samples were taken from 0 to 20 cm layer within 40 greenhouse. As a result, in the light of the findings that obtained, the pH values of the soil samples used in the investigation were found to be between 6.52 and 7.75. EC values of soil samples were found to be between 782-4760 $\mu\text{mhos cm}^{-1}$. Taking into account that the CaCO_3 contents of soil samples, it was found between 0.79 % and 22.19 %. All of the soils were found to be between 0.01% and 3.27% in terms of organic matter content. The total N values of soil samples were between 0.00 % and 0,16 %. P contents ranged from 2.30 to 127.45 mg kg^{-1} . The average P value is found to be sufficient at 38.84 mg kg^{-1} . When the Ca values of soils were found that between 3575.85 mg kg^{-1} and 7821.92 mg kg^{-1} that was sufficient. The K values of the samples ranged from 179.72 mg kg^{-1} to 813.44 mg kg^{-1} and on average a high value. The Mg values of the soil samples were found to be between 392.54 mg kg^{-1} and 1657.41 mg kg^{-1} , Cu values of soil samples between 3.17 mg kg^{-1} and 14.46 mg kg^{-1} . Fe values were found between 8.09 mg kg^{-1} and 31.04 mg kg^{-1} . Mg values of soil samples ranged from 16.64 mg kg^{-1} to 149.82 mg kg^{-1} . On the other hand, Zn values of the soil samples were determined to be between 1.00 mg kg^{-1} and 16.27 mg kg^{-1} . This is hoping to provide awareness for the possibility of the implementation of soil analysis in southern Kumluca of Antalya Province for permanent and economic sustainable protected vegetable production.

Keywords: Soil analysis, fertility, organic matter, Antalya Province, Kumluca district

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Diyarbakır İlinde Organik Acı Biber Yetiştiriciliği

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Özet

Ülkemizde olduğu gibi ve bütün dünyada da yaygın olarak çok fazla yetiştirilen bir bitkidir. En çok tüketimi yapılan tür acı biberdir (*Capsicum annuum L.*). Patlıcangiller (*Solanaceae*) familyasına ait olup, çok yıllık bir bitki olarak yetiştirilir. Dünyada üretilen 12.000.000 ton biberin yaklaşık %23'ü Çin de, %10'u Türkiye'de, %9'u Nijerya'da üretilmektedir. Türkiye de yılda üretilen 1.200.000 ton biberin % 60'ını sivribiber, %28'ini dolmalık biber, %4'ünü çarliston biber, %8'ini kaypa, domates biberi, kurutmalık biberler, pul biber elde etmeye uygun biberler teşkil eder. Bitkiler yaşamları süresince birçok stres faktörü ile karşılaşmaktadır. Bitki üzerinde tek başlarına ender olarak etki yapabilen bu stres faktörleri, genellikle etkilerini eş zamanlı olarak gerçekleştirmektedirler. Biyotik (patojen, diğer organizmalarla rekabet vb.) ve abiyotik (kuraklık, tuzluluk, radyasyon, yüksek sıcaklık ve don vb.) stresler tüm bitkilerin fizyolojik işlevlerinde değişikliklere yol açmaktadır. Tüm bu stresler bitkilerin biyosentetik kapasitelerini azaltır, normal fonksiyonlarını değiştirir ve bitkilerin ölümüne yol açabilecek zararlara neden olabilir. Acı biber (*Capsicum annuum L.*) türünün 0.5–1.5 m'ye kadar uzanan sık dallı bir yapısı bulunmakta olup tatlı, acı ve yarı acı biberler olmak üzere üç çeşidi vardır. Acı biber denince akla haliyle acı biberi seven Güneydoğu gelir. Çiğ köftede, yemeklerde acı pul biber bolca kullanılır. Ayrıca biber salçası da bölgede oldukça yaygın. Bölgede pul biberin yeri de ismi de ayrı. Bölge halkı acı bibere 'isot' diyor. Güneydoğu'da Kilis, Şanlıurfa ve Gaziantep biber üretiminde öne çıkan illerimiz olup bunun dışında Diyarbakırda da acı biber üretimi azda olsa yapılmaktadır. Buralarda üretilen biberler kurutulularak pul biber haline getiriliyor. Bir kısmı da salça yapımında kullanılıyor. Yaptığımız bu çalışmada Diyarbakır ilinde organik acı biber bitkisi üretimi için uygun sıcaklık ve toprak isteğine sahip olmasıdır. İlimizde bu familya da olan domatesin Bismil ilçesinde sera ortamında organik olarak yetiştirilmesinin gerçekleşmesi bu bölgedeki insanlar içinde istihdam sağlanması yaptığımız çalışmanın önemini vurgulamaktadır. Acı biber (*Capsicum annuum L.*) çeşitli iklim tiplerine oranla iyi olmasına karşın genellikle en iyi gelişmeyi sıcak ve kuru iklimli yerlerde gösterir. Dünya'da diğer ürünlere göre geniş ölçüde yayılmasında; kolaylıkla yetişebilmesinin yanı sıra farklı tat özelliklerine sahip olması sıralanabilir. Biberin iklim isteği genellikle ılık ve sıcak mevsim meyvesidir. Soğuklara karşı çok hassastır. Optimum sıcaklık isteği 20-25 C 'dir. Bitkiler 5 C'ye kadar hayat fonksiyonlarını sürdürür. Biberin toprak isteği iyi bir gelişme ve yüksek verim için derin, geçirgen, su tutma kabiliyeti yerinde, besin ve organik maddece zengin bahçe toprağı denilen tınlı toprakları tercih ederler. Açık sarı, kahve sarı renkli olup, tohumun temizliği %95, kullanılma değeri %60-65, çimlenme kabiliyeti %65 tir. 1lt tohum 500gr, 1000 tohum ağırlığı 5-6 gr'dır. Bu çalışma sonucunda yetiştiriciliği yapılmaya başlanan acı biberin Diyarbakır ilindeki toprak uygunluğu ve elde edilen verimi belirlenmiş olacaktır. Ayrıca tohumculuk sektörü, firmalar ve çiftçiler içinde önem arz edecektir. Sonuç olarak hem bölgedeki hem de çevre İllerdeki insanlar açısından büyük ekonomik kazanç ve değerli olacaktır.

Anahtar Kelimeler: Organik tarım, Acı biber, Diyarbakır

Comparison elemental content of home-made and factory-produced Mardin Assyrian wines

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Abstract

Beneficial effects of wine (1–2 glass per day), especially the red one, are known since the ancient time. Metals confer special organoleptic characteristics of the wine. Some of them are essential for human nutrients such as Na, K, Ca, Mg. High K/Na concentration ratio (which is very important for the normal functioning of the cardiovascular system) was noticed. Furthermore, several study reported that some of the major metals essential for human growth and development. In this study, samples of the selected home-made and factory-produced Mardin Assyrian wine varieties grown in Mardin-Turkey (2016) were compared according to elemental composition that analyzed using FAAS. All the samples have high amount of macro nutrient. The most abundant macro elements were K and Mg with the highest values recorded as $1450 \pm 28 \text{ mg L}^{-1}$ and $150 \pm 7 \text{ mg L}^{-1}$, respectively. Obtained results indicated that Fe concentration (the mostly presented trace element) was well below 6 mg/L, the value considered as the minimum concentration necessary to form ferric haze. Additionally, it was also the case with Cu, whose concentrations under 1 mg/L may not lead to the copper haze formation. The permitted concentration for Zn (below 5 mg/L), established by the OIV (OIV 2016), was also found in all the samples, practically excluding its undesirable effects on the changes of their aromas and tastes (Dordevic et al., 2017). The main goal of this study was to investigate element composition and compare level of these elements in home-made and factory-produced Mardin Assyrian wines. In all cases, results were obtained as satisfactory and mineral levels in the wine samples were compared literature then results evaluate using SPSS18 statistical program.

Keywords: Assyrian wines, elemental content, FAAS

Effects of fungicide applications and planting methods on severity of rice blast (*Pyricularia oryzae* Cavara)

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Abstract

Rice (*Oryza sativa* L.) is an important grain with regard to human nutrition, being cultivated on an area of 1 160 000 da and yielding 920 000 tonnes throughout. Rice blast caused by the plant pathogenic fungus *Pyricularia oryzae* Cav. is a major disease affecting rice in Turkey and worldwide. In this study, the effects of the fungicide applications, which were used Thiophanate-methyl 70% for seed and Trifloxystrobin 50% for foliar treatment, and planting methods on disease severity of *Pyricularia oryzae* were investigated in field experiments established in the rice producing areas of Çukurova region in years 2011 and 2012. Experiments consisting of Edirne cultivar as a paddy material were conducted split-plot in a randomized complete block with three replications in Çukurova region. Results of this study exhibited that the use of treated seeds and seedlings reduced the severity of the rice blast on rice cv. Edirne. The lowest disease severity was found as 6,1 to 9,3 %. However, the disease severity was also recorded as the lowest value by % 6,6 and % 4,6 through foliar spraying in the plot where the seedlings were performed from treated seeds. No Effect of different spraying and planting methods on the yield was not found statistically to be important.

Keywords: Rice, *Pyricularia oryzae*, planting methods, disease severity

Seedling response of Iranian barley landraces to *Pyrenophora teres* f. *teres* and *Pyrenophora teres* f. *maculata*

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Abstract

Net blotch caused by *Pyrenophora teres* is an important pathogen of barley plants worldwide. There are two biotypes of the fungus. *Pyrenophora teres* f. *teres* causes the net form of the disease and *Pyrenophora teres* f. *maculata* causes the spot form of the disease. Barley landraces are good source of disease resistance. In this study, seedling response of 25 barley landraces obtained from different regions of Iran to 3 single spore isolates of *Pyrenophora teres* f. *teres* and 3 single spore isolates of *Pyrenophora teres* f. *maculata* were determined under greenhouse conditions. Virulence differences among the isolates were observed. Response of landraces to *Pyrenophora teres* f. *teres* were ranged between moderately resistant and moderately susceptible-susceptible. Response of landraces to *Pyrenophora teres* f. *maculata* ranged between resistant-moderately resistant and moderately susceptible-susceptible. Some landraces showed different response to different isolates. Landraces # 9 and # 16 showed moderately resistant reactions to one isolate of *Pyrenophora teres* f. *teres* and showed moderately resistant-moderately susceptible reactions to 2 isolates of *Pyrenophora teres* f. *teres*. Landraces # 7, # 11, # 15, # 17, # 21, # 22, # 23, # 25 showed moderately resistant-moderately susceptible reactions to all 3 isolates of *Pyrenophora teres* f. *teres*. Landrace # 23 showed resistant-moderately resistant reaction to one isolate of *Pyrenophora teres* f. *maculata* and showed moderately resistant reactions to 2 isolates of *Pyrenophora teres* f. *maculata*. Landrace # 16 showed moderately resistant reactions to all isolates of *Pyrenophora teres* f. *maculata*. Landraces # 11, # 15, # 21, # 25 showed moderately resistant reaction to one isolate of *Pyrenophora teres* f. *maculata* and showed moderately resistant-moderately susceptible reactions to 2 isolates of *Pyrenophora teres* f. *maculata*. Landraces that exhibited reactions between resistant-moderately resistant and moderately resistant-moderately susceptible could be used as a direct seeding material to the field or could be used as breeding materials.

Keywords: *Drechslera teres*, Barley, Landrace



Genetic improvement of tomato by targeted control of fruit softening

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Abstract

Controlling fruit softening in tomato (*Solanum lycopersicum*), in the absence of a negative impact on other ripening events, is a major challenge, but vital to maintain good shelf life. This work was focused on identification of the gene underlying a major texture quantitative trait locus (QTL) in tomato to provide a mechanism for selectively controlling fruit texture in the absence of effects on other quality attributes. A texture QTL was mapped to tomato chromosome 3 in a previous study using the Zamir *Solanum pennellii* introgression lines (IL) (Eshed and Zamir, 1995). Fine mapping within IL3-4 revealed a 1 Mb region harbouring the texture QTL. Within this region was a gene encoding a pectate lyase that was strongly expressed in the soft M82 parent, but lowly expressed in the firm fruit of the IL3-4 parent. This PL (*Solyc03g111690*) was nominated as the QTL candidate gene and the effect of modulating its expression was tested in transgenic plants using an RNAi approach. Fully red ripe RNAi PL fruits were substantially firmer than wild type, but ripened normally with respect to colour, sugars, acids and the development of flavour volatiles. PL was necessary for cell wall pectin solubilisation and depolymerisation, linked to cell-to-cell adhesion, and played a much more significant role in softening than previously characterised cell wall modifying enzymes. The GM approaches and availability of natural variation described in this work provide methods to enhance texture and extend shelf life in tomato without compromising fruit quality.

Keywords: Fruit ripening, RNAi, shelf life, pectate lyase



DNA polymorphism and Phylogenetic Analyse of Halep Goats in Şanlıurfa Province Based on Mitochondrial Cytochrome b Gene

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Abstract

In this research, determination of phylogenetic tree of Halep goats in Şanlıurfa province using molecular techniques was the main goal. Blood samples were collected for genomic DNA isolation. In DNA samples, forward and reverse primers were used to amplify mitochondrial Cytochrome b (*Cyt b*) gene region. Mitochondrial *Cyt b* gene region were amplified by applying polymerase chain reaction (PCR) technique, and gene sequence information of PCR products were obtained. The rate of G+C, number of polymorphic site (S), number of haplotypes (h), haplotype diversity (H_d) and nucleotide diversity (π) were calculated. In goats, DNA polymorphism based on *Cyt b* gene sequence, total number of site, the rate of G+C, number of polymorphic site, number of haplotype, haplotype diversity, nucleotide diversity values were found to be 430, 0.445, 5, 4, 0.311 ± 0.0294 , 0.00102 ± 0.00083 , respectively. In goat haplotypes, genetic distance between haplotypes ranged from 0.00188-0.00605. Phylogenetic analyses based on DNA polymorphism in *Cyt b* gene region were performed to research the phylogenetic structure in sheep. In phylogenetic analyses; UPGMA (Un-weighted Pair Group Method with Arithmetic mean) method and Kimura-2-parameter model were used in order to show the genetic relationship in goats.

Keywords: mtDNA, Halep goat, Phylogenetic

Effects of Different Irrigations Systems and Irrigation Regimes on Yields of Silage Corn Production (*Zea mays* L.)

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Abstract

The aim of this study was to evaluate the effects of different water quantities of furrow and drip irrigation systems on the corn yield and yield components under Iğdır conditions. Irrigation amounts of water used were; 25%, %50, %75, and %90 of available water capacity. Significant differences were between both irrigation systems and quantities of water on yield and yield parameters; plant height, green herbage yield, leaf ratio, cob ratio, stem ratio, dry matter yield, crude protein ratio and plant weight. It was concluded that plant height (196.7-276.7 cm), green herbage yield (4269.8-12925.9, kg/da), cob ratio (%1.13-1.60), leaf ratio (%12.7-19.5), stem ratio (%41.1-69.2), dry matter yield (2220.9-4513.6 kg/da), crude protein ratio (%4.77-6.91) and plant weight (583.3-1550.0 g). The drip irrigation system had the more effect on the plant height, leaf ratio, cob ratio, dry matter yield compared with furrow irrigation, crude protein ratio and plant weight. It was also observed that the highest values of investigated characters except for leaf and stem ratio were obtained from irrigation water amount of %25-50 deficit at the end of the trial. As a result of the experiment, the highest green herbage yield (FISxI₂₅), dry matter yield (FISxI₂₅₋₁₅₀), ear number (FIS-DIS xI₂₅₋₁₅₀) and stem ratio (FISxI₇₅) and the lowest values of both in FIS and DIS at I₇₅₋₁₉₀ treatments were observed in silage corn production. Consequently, it will be most appropriate to have irrigation of 25-50% available water capacity in respect of ecological balances, the soil salinity and shortage of the water resources in both irrigation methods in general.

Keywords: Silage corn, irrigation systems, yield and yield components

The Effect of Different Glycine Betaine Applications on Plantlet Developments of Osmanli Strawberries

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Abstract

Glycine betaine (GB) is a quaternary ammonium compound that can be found in a wide range of bacterial, plant and animal species. The exogenous application of GB is a convenient method for the induction of crop tolerance to various abiotic stresses, and production quantity. The effect of GB seems to be strongly dependent on concentration, time and method of application, stress conditions, plant developmental stage, plant genotype, and species. In this study, the effects of different GB concentrations (0, 10, 20 mM) on plug plantlets of Osmanli strawberry cultivar. Results showed that as GB concentration increased chlorophyll index, numbers of crown, and crown diameters were increased. The best GB concentration for plantlet development was found to be 20 mM.

Keywords: plug plant, exogenous treatment, morpho-physiological characteristics

The role of surface molecular effects of clay soil-sorbents in formation of filtration capillary anomalies

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Abstract

During many tens of years in the reclamation soil science practice established determination of filtration-capillary determinable main parameters on the soil-ground sample in the laboratory condition (and rarely field samples) on the base of using standard methodic. Every these test and investigation means, that filtration processes obeys, linear law of Darsi, discovered two century ago, which establish functionally linkage between filtration fictitious speed and pressure gradient. Despite of, in the many experimental researches indicates deviation from the linear law of filtration, regularity of running processes did not fit in the frame of resistance law determinable for Newtonian fluids, that puts in the agenda necessity of using generalized Shedon-Bingman model reflection of real picture of filtration processes in the clay soils, which base on analysis of accumulated data analysis and suitable information [1,2,3]. The conducted calculations in order to determine optimal distance between open water catchment and close drainage pipes of drainage systems, with little exception based on filtration linear law widely used in the reclamation practice, for any hydrological scheme and litho logical cuts. Of course, general regularity in connection filtration speed gradient, it remain unchangeable, but calculation parameters is quit difference and same time border condition of concrete task limited using of filtration contour in wide distribution area. It has been easily establish, that the meaning of porosity not determine value of filtration coefficient, because same porosity clay and sand filtration coefficient of soils may be difference from each other with several orders. The collected experimental data not discovered enough for overcome barrier and became from linear filtration to nonlinear to taking into account surface-molecular phenomena, which is characteristics for clay soil ground. Despite to many researches conducted at the water permeability of soil-ground and various porosity material, until is not clarity in the filtration regularity. One reason of this condition may considered negligible of surface phenomena role in processes formation.

Keywords: Soil, ground, filtration, property, clay.

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Determination of the effect of field dodder (*Cuscuta campestris* Yuncker) on some plant pathogenic fungi and *Trichoderma harzianum* **

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Abstract

This research was carried out to determine antifungal effects of field dodder (*Cuscuta campestris* Yuncker) which causes significant yield loss in agricultural production. In this study, different concentrations (%10, 20, 30, 40, 50) of methanolic and aqueous extracts of field dodder had been used in the extracts against the mycelial growth on the plant pathogens as *Rhizoctonia solani*, *Sclerotinia sclerotiorum*, *Fusarium oxysporum*, *Alternaria alternata*, *Macrophomina phaseolina* and *Trichoderma harzianum* which is a biological control agent. *In vitro* findings show that aqueous and methanol extracts were found to be negatively affected mycelial growth of fungi excluding *F. oxysporum*. Also, increasing concentration has negative impact on the mycelial growth in fungal species while the best mycelial growth was observed in control petries. In conclusion the phytochemicals effects of extract of field dodder could be used against some of the plant pathogenic fungus. As a another result, in transferring to practice with field experiment of this study should be considered as an important result that *T. harzianum*, a biological control agent, wasn't affected by the low intensity of the extract

Keywords: *Cuscuta campestris*, Aqueous-methalonic extract, Antifungal effects, Biological control agent

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Effects of Biochar Application on Physiological Development of Dwarf Bean

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Abstract

Increasing population and its high nutritional needs accentuate the requirement of endurable agriculture. In past few years, there has been a great emphasis on the usage of biochar for soil remediation. It is widely being used, specifically in developing countries as a soil regülatör due to its mitigating effects on physical and chemical properties of soil. However, its utilization for soil amendment is still limited in several countries, including Turkey. Different fertilizer applications and soil amendments become prerequisite in arid and semi-arid regions like Central Anatolia where soil is deficient in organic matter and plant nutrients. Focusing these issues, in this study we determined the effects of Biochar on physiological development of dwarf bean under greenhouse growth conditions. We collected data for nutrient elements uptake, yield and other related plant growth parameters after barnyard manure and biochar application. As compared to control, we obtained 19% and 16% increase in plant height in barnyard manure and biochar treatment, respectively. Additionally, an increment of 77% in fresh weight and 30% in number of beans was investigated as compared to control in case of biochar treatment. We may conclude the positive effects of biochar application on plant growth and development from the determined outcomes of the study. Such studies may provide a roadmap for upcoming research strategies related to the utilization of Biochar for different plants growth and soil improvement.

Keywords: Biochar, dwarf bean, organic material, plant nutrients

The role of hyperforin on adipocyte differentiation in 3T3-L1 pre-adipocyte cell line

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Abstract

Hyperforin is a phytochemical produced by some of the members of the plant genus *Hypericum*, notably *Hypericum perforatum* (St John's wort). Hyperforin (along with adhyperforin) is believed to be one of the three chief active constituents of St. John's wort -the other two being hypericin (along with pseudohypericin) and several flavonoid constituents. Although anti-obesity effect of *Hypericum perforatum* is well-known, the role of hyperforin isolated from *Hypericum perforatum* on adipocyte differentiation is not known very well. The aim of this study is thus to identify and characterize the transcription factors in the process of adipocyte differentiation after the hyperforin treatment. In this study, concentration of 0, 25, 50, 75 and 100 nM hyperforin were treated to 3T3-L1 pre-adipocytes in cell culture. MTT cell cytotoxicity, cell viability with trypan blue staining, Lactate Dehydrogenase (LDH) enzyme assay, triglyceride content assay, Glycerol-3-Phosphate Dehydrogenase (GPDH) activity, Oil Red O staining and mRNA levels of transcription factors (*PPAR γ* , *C/EBP α* and *SREBP-1c*) were investigated in hyperforin induced 3T3-L1 pre-adipocyte cell line. Hyperforin treatment decreased cell population growth of 3T3-L1 pre-adipocytes, assessed with trypan blue staining, MTT test and rising of LDH release proportion. Hyperforin inhibited GPDH activity and intracellular triglyceride content in 3T3-L1 adipocytes in all treated groups in a dose-dependent manner. Oil Red O staining indicated that hyperforin inhibited adipocyte differentiation in 3T3-L1 adipocytes in all treatment groups. In this study, it was revealed that exposing 3T3-L1 pre-adipocytes and differentiating postconfluent pre-adipocytes to different doses of hyperforin decreased *PPAR γ* , *C/EBP α* and *SREBP-1c* mRNA levels as compared with their controls without treatment in dose dependent manner. Although, reduction of *PPAR γ* and *C/EBP α* mRNA levels were statistical significant, this decrease was not significant in *SREBP-1c* mRNA level. This study demonstrated that hyperforin treatment inhibited the adipogenesis through the down-regulation of transcription factors, especially *PPAR γ* and *C/EBP α* . Alternative mechanisms may involve cell cycle arrest and the induction of apoptosis. As a result, consumption of hyperforin may contribute to the maintenance of body weight and prevent the development of obesity.

Keywords: 3T3-L1 cell line, adipocyte differentiation, hyperforin, transcription factors

In Vitro Micro-Propagation of Rosehip (*Rosa montana* Chaix subsp. *woronovii* (Lonacz) Ö. Nilsson)

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Abstract

Tissue culture is a propagation method widely used in modern agriculture technique as it allows production of many clonal plants from little material. There aren't any studies both in Turkey and around the World about rosehip. In this study, micro propagation attempt was made in *Rosa montana* L. Cultivar "Gerçekcioğlu" with shoot tip culture. Axillary buds were used as production material. Shoot explants were cultured on MS medium supplemented with three different concentrations of BAP, three different concentrations of NAA and two different concentrations of GA3 for shoot and root formation and multiplication. Explants in MS medium on shoot and root initiation were tested.

Keywords: In vitro, tissue culture, micropropagation, shoot tip, rooting, shoot regeneration

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Tailoring Surface Structure of Polyamide Membranes via Low Pressure Plasma for Improved Reverse Osmosis Performance in Pomegranate Juice Concentration

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Abstract

Membrane fouling is a major drawback of reverse osmosis (RO) process limiting its widespread use, particularly in food industry. The fouling usually occurs due to deposition of macromolecules on the membrane surface and results in rapid flux decline, decreased selectivity and energy loss. Low pressure plasma treatment has found ever increasing applications especially in modification of surface characteristics of membrane without affecting bulk material. The aim of this study was to tailor surface characteristics of commercial polyamide RO membranes (UTC-73U, Toray) by low pressure nitrogen plasma (LPNP) to improve performance during RO of pomegranate juice. The effect of plasma power (75–90–105 W) and exposure duration (5–10–15 min) on surface properties has been characterized by surface free energy (SFE) components calculated from contact angle values. The performance of novel LPNP modified RO membranes were compared with that of commercial ones on the basis of flux profile during RO of pomegranate juice. The significant increase in hydrophilicity of all membranes following LPNP modification was confirmed by the decrease in contact angle analysis, up to 88%. As determined by the electron donor component of SFE (γ^-) and SFE of interactions (ΔG_{iwi}), maximum effect was achieved with 90W plasma power and 15 min of exposure. Beyond 90W, no major change in descriptive components of SFE of the membranes was observed. Following LPNP modification at selected operating parameters, the benchmark performance tests revealed about 138–141% improvement in permeate flux during RO of pomegranate juice.

Keywords: low pressure nitrogen plasma, reverse osmosis, fouling, polyamide membrane

The Effect of Storage Temperatures and Packaging Materials on Lipid Changes of Diced Hazelnut

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Abstract

The purpose of this study was to investigate the effects of 2 packing materials (polyethylene terephthalate/aluminium/polyethylene (AL) and polyethylene/polyamide/polyethylene (PE)) and 3 storage temperatures (20, 28, and 37 °C) on the quality attributes of diced hazelnuts as a function of storage time. Moisture, free fatty acidity, peroxide, fatty acid distribution, α - and γ -tocopherol, oxidative stability, L*, a* b* and sensory evaluation analyses were carried out during 1 year of storage in hazelnut samples supplied from the Ordu region, Turkey. The sample was a mixture of hazelnut varieties processed by the Turkish hazelnut industry. Results indicated the shelf life of the samples from shortest to longest was as follows: stored at 37 °C and packed in PE < stored at 37 °C and packed in AL \leq stored at 28 °C and packed in PE < stored at 28 °C and packed in AL \leq stored at 20 °C and packed in PE < stored at 20 °C and packed in AL.

Keywords: Packaging Materials, Lipid Changes, Storage Temperatures Hazelnut



Whether Boztepe Forestland Could Be Turned Into an Urban Forest

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Abstract

Unplanned and intensive urbanization caused by the rapid population increase in recent years resulted in the deterioration of the green spaces located within cities. This fact has increased the desire of townspeople to be near to these spaces. The notion of “urban forest”, which is among the widely adopted urban green space systems both in Turkey and around the world, has derived from the efforts to turn urban spaces into more habitable places and decrease the negative effects. Urban forests are supplementary elements that contribute to the society in economic, ecologic, sociologic and aesthetic terms, and that connect urban and rural texture to one another. In the current study, taking into consideration the demand of the residents of Trabzon for a quality green space, we will analyze whether Boztepe forestland could be turned into an urban forest in terms of the criteria: distance to the city center, areal extent, access, recreational utilization, vegetation and capacity. In order to scrutinize the area of study in recreational sense, a survey study will be conducted with urban people, and in this way, the recreational capacity of the area will be revealed. Through analysis of the gathered data in SPSS environment, socio-demographic structures and utilization tendencies of users will be detected. Given the amount of green space per capita is quite small in Trabzon, a substantial increase will be seen in the green space per capita thanks to the study being conducted. Therefore, it is assumed that this advantage will offer new opportunities of utilization to people living in Trabzon in recreational terms.

Keywords: Urban Forest, Recreation, Urban Forest Criteria, Open Green Spaces, Boztepe



Shrinkage effect on effective moisture diffusivity for pretreated and non-pretreated figs during drying

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Abstract

In this study, shrinkage effect on effective moisture diffusivity of pretreated and non-pretreated figs during drying was investigated. In experiments, Sarılop variety figs (*Ficus carica* L) were used as a whole (unsliced and unpeeled). Pretreatment was osmotic dehydration (OD). Before drying process, figs were immersed completely in a sucrose solution at 50 °Brix and 50 °C with a solution/fruit mass ratio of 4/1. OD was applied at 130 mbar for 15 min and then was continued at atmospheric pressure for 165 min thus, the pretreatment period took 180 min. Non-pretreated (fresh) and pretreated figs were dried at 55, 60, 65 and 75 °C in a convective oven. During the drying, diameters of figs were measured by a digital vernier caliper (± 0.01 mm) so shrinkage effect was considered for calculation of effective moisture diffusivity. Results show that, consideration of shrinkage effect presented significant differences ($p < 0.05$) in calculation of effective moisture diffusivity for pretreated and non-pretreated figs dried at the same temperatures.

Keywords: Fig, drying, effective moisture diffusivity, shrinkage, modeling

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Soil Microbial Biomass and Activity Changes in Relation to Afforestation in The Eroded Soils

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Abstract

Turkey possesses of forest cover of 22.3 million ha, equaling to 28.6 percent of the total land mass of the country. However, Turkey is one of the most erosion-prone countries in the world. Last two decades, Turkish Ministry of Forestry and Water Affairs is implementing nationwide reforestation and afforestation program. The major objective of this study was to evaluate soil characteristics and quality changes associated with the afforestation in semi-arid lands of Turkey. For this purpose, a total of 75 soil samples were taken from Scotch pine (*Pinussylvestris*), black locust (*Robiniapseudoacacia*) and bare land (control) located in the Torul county of Gümüşhane Province. Additional core samples and microbial soil samples were collected from each site to determine other physico-chemical characteristics of the topsoils (0-20 cm). Results from this study showed that organic C was highest in the black locust soil and lowest in the bare land. The microbial biomass C increased in the order black locust > Scotch pine > bare land, respectively. The microbial quotient (Cmic/Corg) of soils are positively influenced by afforestation as the bare land soils exhibited lower microbial quotient than did the associated scotch pine and black locust soils. These ratios illustrated that afforestation supply appropriate living site for soil microorganisms. The results of this study indicate that under the semiarid conditions, afforestation depending on the selected tree type has different effects on several soil properties, as well as on the microbial biomass and activity.

Keywords:Afforestation, Microbial biomass, soil quality, soil erosion

The Importance of Remote Sensing (UA) in Determining Water Quality

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Abstract

Remote sensing (UA) is a technique for studying the earth's and earth's natural or artificial source resources. It has been in use for many years, without physical connection to natural or artificial sources on earth, with measuring instruments used to measure specific parameters added to certain distances from the earth, atmospheres, or extras. Remote sensing is also a commonly used method in mapping. Remote sensing is also a system of remote sensing sensors, often mounted on airplanes. Space platforms are built from sensors mounted on platforms. The prominence of remote sensing in water quality allows us to remotely systematically see the water quality of natural or artificial resources on the earth without any effort. Water quality assesses the main physical, chemical and biological properties of the water in terms of water quality through the use of symbols and remote sensing, depending on the intended use of the water. All living beings are connected to the water, and the water resources are gradually decreasing, and the proportion of communities experiencing water problems is increasing. 97% of the world's water is composed of oceans and 3% is composed of fresh water. Fresh water accounts for 31.4% underground water, 68.3% for icebergs and glaciers and 0.04% for other waters. 2% marsh, 11% lakes and 87% make surface water. With remote sensing, it is possible to measure and evaluate the quality of water of sweet, salt water resources on the earth in the fastest way. The ability of water resources on the world to be determined by remote sensing technologies instead of long-term determination of water quality through physical intervention will provide significant contributions in terms of time and planning. As a source of information on remote sensing, the researcher is able to present all the information and update the desired time and evaluate the results. Among the satellite-based evaluation methods, remote sensing and determination of water quality have a very important point in that they can easily update the practical data in a short time and achieve the results more effectively and precisely.

Keywords: Water Quality, Remote Sensing, Turkey

Growth and Adaptation Variations in Zonguldak Region of Stone Pine (*Pinus pinea* L.) Provenances

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Abstract

Stone pine (*Pinus pinea* L.) is one of the our forest tree species within important economic and socio-cultural values because of the resin and economic seeds. Due to these values, the natural distribution areas of Stone pine, which has 36000 hectares in Turkey, are increasing every year with afforestation applications. One of the areas subject to intensive afforestation activities is the Zonguldak, Bartın and Kastamonu regions of the Western Black Sea Region. In this context, the results of the first 5-years growth performances (height and bottom diameter) and survival percentages of the afforestation studies established with the seedlings grown from the provenances of Bartın-Kurucaşile, Bartın-Çakraz, Zonguldak-Kdz.Eregli and Düzce-Akçakoca in Zonguldak-Çaycuma region have been determined. As a result of the applied variance analysis (One way ANOVA), significant differences ($P < 0,001$) between the origins in terms of growth and adaptation ability were determined statistically. In terms of growth and adaptation in the first 5 years results, Kurucaşile and Çakraz provenances showed better performance than others.

Keywords: Stone pine, height, diameter, survival percentage, provenance

Determining The Ecological Parameters of Hazelnut (*Corylus* sp.) Plantation in Giresun Province, Turkey

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Abstract

Ecological parameters referred as physiographic, edaphic, climatic, and biotic factors constitute the main components of terrestrial ecosystems. All these factors are important for natural and plantation forests. Naturally, hazelnut (Betulacea; *corylus* sp.) species are one of the understory vegetations in shrub layer of the northern forest ecosystems. In several decades, this species has been cultivated for commercial purposes in this region that provide 67% of the world hazelnut demand. Furthermore, the highest quality hazelnut is cultivated in north eastern Turkey, Giresun province. Therefore, it is important to know about the site index and ecological parameters of hazelnut plantation in this region. This study was conducted to determine ecological factors of hazelnut (*Corylusavellena* L. and *Coryluscolurna*L.) plantations in three different (Piraziz, Keşap and Görele) micro-site in Giresun province. Soil samples were taken at topsoil (0-30 cm) and subsoil (30-60 cm) depths in each micro-site. Some soil properties (Texture, particle size density, aggregate stability, bulk density, porosity (%), compaction, pH in water, EC, SOM (%), AWHC (%)) were analyzed. Besides aspect, slope, altitude, climate and predator as biotic factor were determined. Consequently, soil texture vary between sandy loam to heavy clay and PSD; 2.29-2.64 gr/cm⁻³, AGS; 0.732-0.807, BD; 1.02-1.28 (g cm⁻³), P; 44.7-55.2(g cm⁻³), Compaction;1-4 MPa, pH; 4.49-5.87, EC;1.44-2.00 (dS/m), OM;1.8-3.1, AWHC; % 8.02-14.17, aspect; east-southeast-north, slope; 20-70%, altitude; 30-300m, biotic predator; Red Velvet Mites (Trombidiidae; Trombidium sp.) and climate is humid (annual average temperature;14.45 °C and annual rainfall; 1266 mm) were determined.

Keywords: Ecological factors, Hazelnut plantation, *Corylus* sp., site

Evaluation of larvicidal potency of *Bacillus thuringiensis* Vip3Aa16 toxin against *Ephestia kuehniella* (Lepidoptera: Pyralidae) larvae and influence of abiotic factors on its insecticidal activity

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Abstract

The Mediterranean flour moth *Ephestia kuehniella* (Lepidoptera: Pyralidae) is a widespread pest in flourmills. Larvae of this pest feed on stored grains, nuts, dried fruits and several stored food products. BUPM95 is a *Bacillus thuringiensis* subsp. *kurstaki* strain known by its ability to produce a toxin during its vegetative stage of growth (Abdelkefi-Mesrati *et al.*, 2005). This protein named Vip3Aa16 was characterized by an acute insecticidal activity against different lepidopteran pests. The LC₅₀ of Vip3Aa16 protoxin against first instar larvae of *E. kuehniella* was 31.36 ng/cm² five days post-treatment at 28°C. The study of the interaction of *E. kuehniella* brush border membrane vesicles (BBMV) with biotinylated Vip3Aa16 showed that this toxin bound to a putative receptor of 65 kDa producing extensive damage in the midgut of treated larvae (Abdelkefi-Mesrati *et al.*, 2011). In fact, the midgut histopathology of Vip3Aa16 fed larvae showed vacuolization of the cytoplasm, brush border membrane destruction, vesicle formation in the apical region and cellular disintegration. Interestingly, this *B. thuringiensis* protoxin could relatively withstand environmental stresses such as extreme pH, temperature and UV radiations (Abdelkefi-Mesrati *et al.*, 2016). Vip3Aa16 larvicidal efficiency was also resistant to proteases action. These properties could be exploited for novel *B. thuringiensis* insecticide formulation that can be used in biological control programs of undesirable lepidopteran pests.

Keywords: *Bacillus thuringiensis*, Vip3Aa16, Flour moth, BBMV, Abiotic factors.



Determination of Parasitoids and Its Parasitoids Life of *Diplolepis Fructuum* (Rübsaamen) (Hymenoptera: Cynipoidea) as Pest of Rosehip (*Rosa Canina*) in Sivas

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Abstract

This study was made to determine parasitoids and their parasitoids life of *D. fructuum* which are gall-inducing on *Rosa canina*. In the results of the study, as parasitoids were recorded thirteen species belong to Chalcidoidea superfamily. Identification of parasitoids were observed in two ways. The first of these, made by morphological examination of adult and larva. Second, it was done by genomic DNA isolation of adult and larva evaluated morphologically and was compared by sequencing of nuclear (ITS2) and mitochondrial (COI) genome. In addition, examination of opened gall were determined as ecto parasitoid of life strategy of all parasitoids

Keywords: *Diplolepis fructuum*, ITS2, Parasitoids, *Rosa canina*, Total Core Genome

Potential of Betung Bamboo (*Dendrocalamus asper*)'s Fiber for Anti-Bacterial Bathroom Buddies as Fiber-Based Prospective Product in Bali, Indonesia

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Abstract

Bamboo is a plant that grows very fast and most commonly found grass on earth, especially in Indonesia. Bamboos are indeed inseparable from the lives of those people in the tropics. For example in Bali, Bamboo is often used by Balinese people in everyday life as a traditional building material and in some religious ceremonies. However, utilization of bamboo as a prospective product in Bali is still very low. Bamboo contains many chemical substances, for example methanol and penny quinone, that are beneficial as an anti-bacterial agent to prevent any bacterial growth. Bamboo also has a thick cell wall, so that the tensile strength of bamboo's fiber is relatively high and it can be used as a fiber-based prospective product as shower pouf and cleaning mitten to clean your body. Bamboo's fibers manufacture in four stages. First is preparatory stage that includes preparation of the raw material (Bamboo's stem) and liquid chemical (NaOH 10%). Second is softening stage that make bamboo's texture tender by soaking bamboo's stem in softening solution (NaOH 10%). Then, it's continued by rinsing stage to clean the bamboo. Last stage is separating the fiber of the bamboo to obtain the desired fibers. After that, apply the bamboo fiber to produce shower pouf and cleaning mitten. This species of Betung Bamboo or *Dendrocalamus asper* is easily found in Bali and there is no need using fertilizer or pesticides during its cultivation because it grows wild. Furthermore, this study was conducted to optimize the advantage of bamboo's fiber which has an anti-bacterial agents, by making some products (shower pouf and cleaning mitten) that are more effective in killing germs because the touch intensity with skin is longer than other products.

Keywords: bamboo, fiber, Bali, antibacterial, shower pouf, cleaning mitten

Use of Multivariate Adaptive Regression Splines (Mars) in Predicting Body Weight from Body Measurements in Mengali Rams

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Abstract

The aim of the present work was to develop a prediction equation for predicting body weight (kg) of Mengali rams through Multivariate Adaptive Regression Splines (MARS) as a non-parametric regression technique that converts non-linear relationship structures into linear structures in reducing prediction error. In the explanation of the variability in body weight (BW) as a dependent variable, body length (BL, cm), withers height (WH, cm) and chest girth (CG, cm) of the sheep were measured as independent variables. To obtain the highest predictive performance of the MARS data mining algorithm, numbers of terms and basis functions were specified as 4 when degree of interactions was set at 2. Goodness of fit criteria such as R^2 (0.88), $R^2_{ADJUSTED}$ (0.87), SDRATIO (0.35) and Pearson correlation ($r=0.94$) between predicted and actual body weight values were calculated in the evaluation of the predictive accuracy of the MARS data mining algorithm. The Pearson correlation coefficient ($r=0.94$) between predicted and actual body weight values was very high and significant ($P<0.01$) in the MARS algorithm. In the prediction equation of the MARS, only withers height was removed from the MARS model. The MARS prediction equation was developed as $BW = 34.53158 + 0.57169 * \max(0; CG - 83.82) - 0.54473 * \max(0; 83.82 - CG) - 0.01059 * \max(0; BL - 68.58) * \max(0; CG - 83.82)$. MARS prediction equation denoted that BL was associated with CG in the prediction of BW, a target trait. When a Mengali ram had $CG > 83.82$ and $BL < 68.58$, magnitude in BW depended on increasing CG and thus the prediction equation was rewritten as $BW = 34.53158 + 0.57169 * \max(0; CG - 83.82)$. When SDRATIO (0.35) calculated in the MARS modelling was taken into account, it could be suggested the MARS predictive model had a good fit if $SDRATIO < 0.40$. In conclusion, use of MARS algorithm having very high predictive accuracy in the prediction of BW from only two explanatory variables (CG and BL) is recommendable for sheep breeders to obtain meaningful clues in practice for breeding purposes. In further studies, the MARS can be considered as a good selection to examine the relationship between BW and testicular measurements in defining more reproductive Mengali rams.

Keywords: MARS, Data mining, Predictive modeling, Non-parametric regression, Mengalibreed.

Effect of Different Doses of Fertilizer on Growth of Organically Grown Tomato

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Abstract

This study was carried out to determine the effects of different fertilizer doses (100 g m⁻², 300 g m⁻² and 500 g m⁻²) on growth of organic grown Bandita F1 (*Solanumlycopersicum* L.) tomato varieties in greenhouse condition. Tomato plant height (cm), stem diameter (mm) and leaf chlorophyll content (CCI) with different doses of fertilizer applications, decreased with increasing fertilizer doses. In the study, Specific leaf area (cm² g⁻¹) and leaf chlorophyll content (CCI) has been found to greatly increased significant (P<0.05) with fertilizer doses. As a result of this research, 100 g m⁻² application of fertilizer dose have a significant effect on yield and quality of organic grown tomatoes (P<0.05).

Keywords: Tomato; organic fertilizer; growth; greenhouse

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Identification of Some Fruit Characteristics in Wild Bilberry (*Vaccinium myrtillus* L.) Native to Sarıkamış (Kars), Turkey

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Abstract

The purpose of this study was to evaluate some physical and chemical characteristics of wild bilberry fruits collected from Sarıkamış forest of Kars province in Eastern Anatolia Region of Turkey. For this aim, berry width, berry length, berry weight, volume, pH, NaoH, SSC, taste, aroma, L, a, and b in relation to bilberries were measured on the basis of 20 replications. Average values for width, length, weight volume, pH, NaoH, SSC, Taste, Aroma, L, a, and b of berries were found as: 9.117, 8.023, 5.075, 5.550, 2.218, 2.700, 7.405, 2.950, 3.000, 14.884, 1.722 and 0.0650, respectively. Range values for corresponding characteristics were determined: 7.55 to 10.37, 6.95 to 9.80, 3.00 to 7.00, 3.00 to 9.00, 2.04 to 2.60, 2.40 to 3.00, 6.00 to 8.50, 2.00 to 4.00, 13.24 to 16.30, 1.004 to 3.04 and -1.98 to 3.87, respectively. In the current study, strongly significant correlations were estimated for berry width-berry length ($r=0.709^{**}$), berry weight-berry width ($r=0.505^{*}$), berry weight-berry length ($r=0.538^{*}$), a–berry length (0.523^{*}), L-pH (-0.723^{**}), a-pH (0.848^{**}), a-NaoH (-0.543), L-a (-0.768^{**}), respectively. The current research is a preliminary evaluation with regard to some physical and chemical characteristics of the wild bilberries, which are of great importance in terms of human health. Consequently, further comprehensive studies should be conducted on the detection of physical and chemical characteristics of bilberries for breeding purposes in order to gain baseline knowledge on the Flora of Turkey.

Keywords: Adaptation, bilberry, Pomology, Kars (Sarıkamış)



Climate change in urban design and water conservation

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Abstract

Cities are ecosystems that embrace natural-artificial systems and interact between them. The city of ecosystem function in an appropriate manner, it is possible to fulfill the balanced planning policy. Today, with the increase of intense urbanization, the environment we live in every day is affected negatively. Future intensification of technological developments, climatic pressures in urban areas with increasing population will be a big problem. Sudden climate changes that occur in urban areas affect the urban design of urban open spaces and the environment we live in. Especially the increase of the impervious grounds on the surface of the city and the decrease of the green areas related to it are triggering this situation. In this context, the amount of green space in urban areas is increased and design designs suitable for climatic changes are made. Changes in temperature, rise in surface flows due to precipitation, and increases in sea level should be addressed and evaluated. In this way water protection in the cities is ensured. In this study, it is aimed to investigate the methods of struggle in the landscaping areas of water conservation measures brought about by the negative situation caused by climate change. However, proposals on urban design practices will be developed. Green tapes, which are important elements of landscape architecture applications, will be emphasized and examples of water conservation practices in urban areas with climate change related drought will be developed.

Keywords: Climate change, water conservation, urban planning



The Health Effects of Acrylamide in Food

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Abstract

Acrylamide is a synthetic monomer that has been produced since 1950. It has been used in numerous industrial processes such as making paper, dyes and plastics. It is also used to treat both drinking water and wastewater. In the past, it was assumed that occupational exposure to acrylamide is only risky for health since it had been believed that humans are rarely exposed to acrylamide in their daily life. However, in 2002, researchers discovered that acrylamide has been found in starchy foods such as potato and cereal-based products that have been cooked and processed at high temperatures (>120 °C). According to the Report of a Joint FAO/WHO in 2002, average intakes for the general population were estimated to be in the range of 0.3 to 0.8 µg of acrylamide intake/kg bw/day and food products were estimated to make a significant contribution to total exposure of public to acrylamide. Some studies showed that high levels of acrylamide lead to cancer in animals and neurological damage in humans. Also, acrylamide is expected to be genotoxic due to its efficient conversion in humans and in rodents to the reactive and genotoxic metabolite glycidamide. Since any level of exposure to a genotoxic substance could potentially damage DNA and lead to cancer, EFSA's scientists conclude that they cannot set a tolerable daily intake of acrylamide in food. Despite uncertainties over acrylamide's actual health effects at the levels found in food, there is heightened public awareness about this compound. Due to all these risks, it is necessary to determine the toxic effects of acrylamide and transfer it to the consumers.

Keywords: Acrylamide, Health effects, Carcinogenicity, Genotoxicity, Neurotoxicity



The Role of Bumblebee (*Bombus terrestris* L.) in the Pollination of Greenhouse Crops and Its Commercial Use in Turkey

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Abstract

Bumblebees, a group of about 250 species, are among the most important pollinators of both natural and agricultural ecosystems. Due to development of mass rearing techniques, bumblebees have been used as commercial pollinators since 1988. The bumble bee, *Bombus terrestris*, is the most intensively mass-reared species, as this species produces large colonies, adapts quite well to artificial conditions and has a wide distribution. Currently, commercially reared *B. terrestris* colonies have been used for the pollination of vegetable crops particularly tomato over 60 countries including some outside of its native range. In Turkey, commercially reared *B. terrestris* colonies were first used for pollination of tomato plant in 1997. The number of commercial colonies used has increased enormously year by year and annually reached to almost 250000. The use of bumblebee for pollination increases the quality and quantity of greenhouse crops, replaces hormone applications and decreases the use of pesticides in the greenhouse and thus increases the greenhouse producer's profits by leading to a higher market price. Commercialization history of bumblebee, the advantages of the bumble bee pollination in horticultural crops and the commercial applications of bumblebee in Turkey were described in this paper.

Keywords: Bumblebee, Pollination, Greenhouse crops,



Determination of Turf Performance of Some Perennial Turf Grasses And Mixtures in Isparta Ecological Conditions

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Abstract

The aim of the study was to determine turf performance of some perennial turf grasses and mixtures in Isparta conditions. Perennial ryegrass (*Lolium perenne* L.), Kentucky bluegrass (*Poa pratensis* L.), tall fescue (*Festuca arundinacea* L.), creeping red fescue (*Festuca rubra* L. subsp. *rubra*) chewings red fescue (*Festuca rubra* L. subsp. *commutata*) were used as materials. The study was carried out at Agricultural Research and Applied Center of Suleyman Demirel University in Turkey, during 2014-15 years. This research was conducted in randomized block design with three replication. In the experiment were determined speed of establishment, ground cover speed, ground cover rate, cold tolerance, leaf color, regeneration power, leaf texture, tiller number, general appearance, infrequency degree and dry matter yield. According to results of this study, perennial ryegrass showed the best performance in terms of speed of emergence, ground cover speed, ground cover rate, general appearance and infrequency degree, while tall fescue showed the best performance in terms of cold tolerance, leaf color, regeneration power and dry matter yield in pure sowings. When the mixtures are compared, the mixtures with perennial ryegrass showed the performance better than the others. As a results, pure perennial ryegrass or mixtures with perennial ryegrass may be used for turf establishment in Isparta conditions.

Keywords: turf grass, speed of establishment, ground cover speed, tiller number, cold tolerance, leaf color.

Evaluation of Temperature-Humidity Index Values on Dairy Cattle in

Siirt Conditions

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Abstract

Turkey is a country with mild climate where four seasons coexist due to its geographical location. Daily average temperature values in summer months (June, July, August, September) can exceed 25° C. All organisms can be exposed to heat stress especially in the Mediterranean and Aegean regions where the humidity is very high and in Southeast Anatolia region where average temperatures are very high. Evaluated for animal production, heat stress can cause the important yield losses in dairy cattle reared in these regions. Even though many methods used to measure and analyze heat stress, the most common parameter is temperature-humidity index (THI). Data taken from Meteorological Service of the Siirt province and its district stations were used to measure temperature-humidity index for these regions. Findings show that THI values for Siirt, Pervari, Baykan, Kurtalan, Şirvan and Eruh were 72.43 ± 0.25 , 67.64 ± 0.26 , 71.80 ± 0.25 , 72.34 ± 0.25 , 71.67 ± 0.25 and 68.87 ± 0.25 , respectively. The THI values calculated in June, July, August and September for Siirt province and districts exceeded 65 or 72 threshold values. However, Pervari and Eruh districts had significantly less THI values than other regions, showing that these regions are more suitable for dairy cattle production ($P < 0.05$). As a result, it is a necessity to use adequate cooling systems in Siirt conditions at times when heat stress occurs for a sustainable dairy cattle production.

Keywords: Temperature-Humidity index (THI), heat stress, dairy cattle,

Variation of Phenolic Compounds in Grafted Pear Cultivars on Some Clonal Rootstocks

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Abstract

For pear cultivation, dwarf quince and pear clonal rootstocks are used to obtain high quality fruits and to make caring activities and easy harvest. This study was carried out between 2014 and 2016 in order to determine the relationship between graft incompatibility and the variation of phenolic compounds in some cultivars which were grafted on different rootstocks. In the research, BA 29, OHxF 333 and Farold 40 were used as clonal rootstocks. They were grafted with 'Williams' and 'Deveci' pear cultivars. The bark tissue samples were taken from two places (3 cm below and above the graft union) approximately 10 months (July 2015) after the grafting. The content of total phenolic and individual phenolic compounds (arbutin, catechin, epicatechin, chlorogenic acid, caffeic acid, procyanidin B1, procyanidin B2 and rutin hydrate) were determined by High Pressure Liquid Chromatography (HPLC). The most abundant phenolic compound in phloem above and below the graft union was arbutin, followed by epicatechin, procyanidin B1, catechin and chlorogenic acid. Arbutin content had been found lower at the below of the graft union in BA 29 than OHxF 333 and Farold 40 rootstocks. Farold 40 and BA 29 rootstocks which were grafted with 'Williams' cultivar had the highest chlorogenic acid level at the below of the graft union. The highest chlorogenic acid content is usually measured above the graft union in 'Deveci', on the other hand in 'Williams' cultivar it was measured below the graft union. In the study, it was determined that the catechin content was found higher above and below the graft union in 'Williams' cultivar that grafted on BA 29 and Farold 40 clonal rootstocks compared to 'Deveci' cultivar. In all combinations, epicatechin content was found higher at the below of the graft union than the above of the graft union. In 'Williams' cultivar, level of caffeic acid was found higher below the graft union than above the graft union. In both rootstocks (BA 29 and OHxF 333), procyanidin B1 content was found higher at the above of the graft union. The procyanidin B2 and rutin hydrate contents were found higher at the above of the graft union in 'Deveci' and 'Williams' cultivars. As a result of the research, it had been found that total phenolic and individual phenolic compounds such as arbutin, epicatechin, procyanidin B1, caffeic and chlorogenic acids can be used as an indicator for graft incompatibility among the pear and rootstocks.

Keywords:Graft incompatibility, HPLC, Pear, Phenolic compounds, Rootstock-scion

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The Use Areas of Tomato Paste Wastes in Food Industry

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Abstract

Tomato (*Lycopersicon esculentum L*) is the world's second largest vegetable crop. Around the world, nearly 37 million tons of tomatoes are used in the industry in a year. Most of the world's tomato crop is processed into tomato paste, which is used as an ingredient in many products, such as sauces, ketchup and soups. Tomato industry generates large amounts of by-products, and these by-products representing 10-30% of total processed tomatoes contain tomato seeds, peels, pulp and cores. Seeds and peels present in tomato pomace consist of the substances that are rich in nutritional value. It is underlined in some studies that they are rich in biologically active compounds, such as dietary fiber, protein, oil, mineral matters, phenolic compounds and carotenoids. Thus, it is thought in some studies to determine the potential of paste waste materials in nutrition of human. Tomato pomace, tomato peels or tomato seeds were used to improve the nutritional and functional properties of some foods such as bread, cracker, biscuit, tarhana, fermented sausage, tomato paste and ketchup in recent years. The results of these studies showed that the addition of these waste materials had significant effects on nutritional, functional and technological properties of food products, and the aim of this review is to give the results of these studies.

Keywords: Tomato pomace, tomato seed, tomato peel, functional food, nutrition



Determination of Harmful and Beneficial Insect Species in Vineyard Areas in Our Country

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Abstract

The grape is one of the oldest fruit species cultivated on the world, It dates back to 5000 years B.C. Grape is one of the most widely cultivated plants in the world, due to its variety of uses, lack of selectivity due to climate and soil desires, multi-annuality and easy proliferation methods. However, there are a large number of disease-causing, mite and pest species that adversely affect our country's vineyard. In our country, *Lobesia botrana* (Denis & Schiffermüller) (Lepidoptera: Tortricidae) is the main harmful, *Klapperichicen viridissima* (Walker) (Hemiptera: Cicadidae), *Viteus vitifolii* (Fitch.) (Hemiptera: Phylloxeridae), *Eriophyes vitis* (Pgst.) (Acarina: Eriophyidae), *Arboridia adanae* (Dlabola) (Hemiptera: Cicadellidae) and some Thrips (Thysanoptera) and *Planococcus citri* (Risso) (Hemiptera: Pseudococcidae) are harmful which have second-grade importance. From time to time, These pests cause considerable damage by exceeding the economic loss threshold. This review study aims to identify the important insect species seen in the vineyards in Turkey and the beneficial species that have important roles in the biological struggle of these harmful species. As a result of the work to be done, it will be better understood how important the biological struggle method against the harmful species is.

Keywords: vineyards, pests, beneficial insect, biological struggle



Influence of Prohexadione-Calcium on Vegetative Growth and Reproduction of '0900 Ziraat' Sweet Cherry

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Abstract

The study was carried out to determine the effects of prohexadione-calcium (ProCa, 125 and 250 mgL⁻¹a.i.) and Pro Ca⁺ ammonium sulphate (ASM, 500 mgL⁻¹) treatments on vegetative parameters like shoot growth, branch diameter, trunk cross-section alarea (TCSA), canopy volume, flower number (cm⁻²), fruitnumber (cm⁻²) and quality traits like fruit size, firmness, color, titratableacidity and soluble solids content (SSC) of 0900 Ziraat variety. Both treatments were implemented on 10 cm long shoots. Compared to the control, in 2015, TCSA was reduced only with Pro Catreatments (125 and 250 mgL⁻¹); canopy volume and shoot length, on the other hand, were reduced significantly withall treatments. Whereas the numbers of fruit sand flower sper cm² were increased substantially withall treatments. While the rewereno differences between the treatments in terms of fruit size, firmness, colorand SSC; titratable acidity was substantially low in both 250 mgL⁻¹ ProCaand 250 mgL⁻¹ Pro Ca⁺ ASM treatments. As a result, it is shown that Pro Catreatments can be use deffectively to limit sucker growth and increase numbers of fruits and flowersper cm².

Keywords: Canopy volume, Prunusavium L., Regalis, shoot length, TCSA



General Overview of Agricultural Subsidy System in Turkey

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Abstract

Agricultural subsidy is one of the important and relevant issues in the world. Due to distinctive circumstances, agriculture sector is subsidized in the world that is based on the development level of the countries. Turkey has been attempting to subsidize the agriculture independently from production because of the developments in the world. As an indicator of agricultural subsidy, PSE value was 18.6% throughout OECD, it was 7% in US, it was 19.4% in EU and it was 22% in Turkey by 2012. In 2015, while the share of agricultural subsidies was only 2% in Turkey's budget, this rate was 42% in EU by 2013. The budget that was shared as agricultural subsidy in US was over 100 billion USD. By 2015, the value of agricultural subsidy was 3.7 billion USD in Turkey, this value was supposed to be around at least 7.2 billion USD based on the agricultural law that was taken by 2006. In order to guarantee food supply and quality, to increase producers' welfare, and to provide reasonably priced products for consumers, it is necessary that is planning the agricultural subsidy policies for long term, and being based on World Trade Organization rules and EU Common Agriculture Policy. Thus, it is important to spare enough budget for agriculture subsidies, and it is important to determine unit prices of agricultural subsidies realistically without effecting market prices and production level to provide competition ability with other countries.

Keywords: Agriculture, subsidy, policy, Turkey.

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Supports Provided to Irrigation Systems in Turkey

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Abstract

Changes in the amount and distribution of rainfall in the world due to the global warming limit the usable water resources. As in developing countries, most of the water in our country is also used in agriculture. In the 21st century, the effective use of water resources and the necessity of getting more crop spere very drop of water has come tot he agenda. The use of pressurized irrigation systems which provide water saving in agriculture and make it possible to irrigate larger areas with the same water is recommended. For this purpose, the establishment of pressure irrigation systems has been supported by the Ministry of Food, Agriculture and Livestock since 2006. In this study, the support given to the pressurized irrigation systems by the Ministry of Food, Agriculture and Livestock was evaluated, problems and solution proposals were given.

Keywords: Sprinkler irrigation, drip irrigation, irrigation supports, Turkey



The Importance Of Stubble For Agricultural Production And The Negative Effects Of Burning Stubbles On The On Livestock, Soil Quality And Environment And The Solutions

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Abstract

After the grains are harvested, the remains of the plant left behind in the soil are called as stubble. The stubble, which serves as a food and a stop for soil microorganisms and constitutes the organic matter of the soil, is very important for agricultural production. However, producers often burn stubbles by many reasons, such as the ability to prepare seed beds faster and easier to grow with the second crop, and the ease of combating certain diseases and pests. As a result of stubble burning, the organic matter in the soil is reduced, microbiological activity is regressed, soil vitalities are lost, water holding capacity of the soil decrease; biological equilibrium is deteriorated and erosion risk increases. In this review, it is focused on the effects of stubble, stubble in soil structure, reasons of stubble burning, negative effects of burning stubble on soil, animal and environment, and solutions.

Keywords: stubble, stubble burning, environmental pollution, biological equilibrium

***Investigation of Waste Mandarin Peels Effect on Leather Aging**

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Abstract

In this study, waste mandarin peels were extracted and detected antioxidant activity by using DPPH method. Principle of method is based on DPPH that is a purple stable compound, inhibition with sample compound. Extracted samples were read by spectrophotometer at 517 nm. Antioxidant activity of mandarin extract was found 65 µM TE/g. The mandarin extract treated with leather after formic acid fixation as a fixator. Leathers were kept under at 80 °C/UV for 72 hours for aging process and the colour values of initial and hindermost leathers were measured with using of Konica Minolta CM 3600d Brand spectrophotometer. At the end of the study, it was found that mandarin extract was a natural antioxidant and if it was used as a fixator, it could have aging retardant effect at the leather production.

Keywords: Aging retardant, DPPH, Leather, Mandarin peel.

*This study was awarded as one of the top project award in the project market within the scope of the 17 th International Science and Spring Festival of Süleyman Demirel University.

The Effect of Sanding Pad Type on the Surface Quality of Particle Boards

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Abstract

Effect of pad types used in sanding operations on the surface roughness and surface absorption values of particleboards was investigated in this study. For this aim, different types and combinations of pads (S1: Medium-Soft, S1: Hard-Medium) and (S2: Medium-Soft, S2: Hard-Medium) were used in the sanding machines where board surface treatments are carried out, and the 8x2100x2800 mm size particleboards (P1, P2, P3, P4) were sanded under the same sanding conditions (belt type, dust ratio and feed rate) and at the density of 700 kg/m³. According to the test results, it was established that the performance of surface sanding operations through the use of different pads (S1 and S2) had an effect on the surface quality properties of the test boards. Accordingly, the best surface roughness and surface absorbance values were found to be 6,56 µm and 213 mm respectively, which were present in the test board P4 sanded with the pad type S2 featuring a combination of hard-medium pads.

Keywords: Particleboard, surface quality, sanding pad type, surface roughness, surface absorption

Genetic Mapping and Quantitative Trait Locus Analysis of Fiber Quality Traits Using A Multi-Parent Composite Population in Upland Cotton (*Gossypium hirsutum* L.)

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Abstract

Cotton is a high-value crop that is produced as a raw material for the textile industry. With the development of new technologies in the textile industry, much attention has been paid to fiber quality in conjunction with yield. In recent decades, improvements in cotton fiber quality and yield have been stagnant and unable to meet the demands of the modern textile industry. However, yield is often negatively correlated with fiber quality in upland cotton. Therefore, yield must at least be maintained when improving fiber quality for a cultivar to remain competitive. Composite cross populations (CP) developed from three or more cultivars/lines are frequently used to improve agronomic and economic traits in crop cultivar development programs. Employing CP in linkage map construction and quantitative trait locus (QTL) mapping may increase the marker density of upland cotton (*Gossypium hirsutum* L.) genetic maps, exploit more adequate gene resources and facilitate marker-assisted selection (MAS). The suite of fiber quality traits that affect the yarn quality includes the length, strength, maturity, fineness, elongation, uniformity and color. Identification of stable fiber quantitative trait loci (QTL) in Upland cotton is essential in order to improve cotton cultivars with superior quality using marker-assisted selection (MAS) strategy. By crossing two parents, *Gossypium hirsutum* cv. Nazilli 84S and *G. hirsutum* cv. IS-4 (having introgression from *G. barbadense*), and through subsequent selfings, we obtained recombinant inbred line (RIL) population of 165 individuals. In the present study, we used SSR markers to construct a linkage map using 165 RIL individuals derived from *G. hirsutum*. The purpose of the present research is to detect quantitative trait loci (QTL) for fiber quality and provide information applicable to cotton breeding.

Keywords: Cotton, Fiber Quality, Genetic Mapping, QTL

Change of Volatile Compounds Produced by Microalgae *Schizochytrium limacinum* with Different Growth Phases and Carbon Sources

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Abstract

There is an intriguing activity for supplementing various food and feed products with microalgal biomass due to their high content of polyunsaturated fatty acids, pigments, proteins and vitamins. When microalgae are integrated into food and feedstuffs, they can also affect their flavor and fragrance characteristics, besides increasing their nutritional value. Head space solid-phase microextraction-gas chromatography-mass spectrometry (SPME-GC-MS) had been applied to analyze the volatile organic compounds of marine microalgae *S. limanicum* rich in polyunsaturated fatty acids, harvested in different growth phases and cultivated with different carbon sources. The results by GC-MS clearly indicated that the volatile components of the microalgae were significantly different in the exponential, stationary and declining phases. Alcohols, aldehydes and esters were at the highest concentration at the end of exponential phase. Sulphur compounds were found to be substantially the largest volatile compounds during the stationary phase. Additionally, the concentration of sulphur compounds were at the highest concentration when *S. limanicum* was grown on glucose and at the lowest concentration when on lactose. The concentration of alcohols, aldehydes and esters were higher when on glucose and glycerol than fructose and lactose. According to gas chromatography-olfactometry (GCO) analysis, *S. limanicum* generally had a characteristics of 1-octen-3-ol (mushroom), hexanal (grass), ethyl valerate (sweet/acid/fruit), 2-acetyl-1-pyrroline (popcorn), (E,Z)- 2,6 nonadienal (cucumber) and (Z) 1,5-octadienone-3-one (geranium) aroma active-compounds. The results may provide information required for deciding the cultivation period and choosing the carbon source used for cultivation of microalgae *S. limanicum* depending on the preferred flavor and fragrance characteristics when the biomass is applied to feed and food products.

Keywords: Microalgae, *Schizochytrium limacinum*, volatile organic compounds, Gas Chromatography-Mass Spectrometry (GC-MS), GC-Olfactometry

Effect of Locust Bean Fracture on In Vitro And Situ Degradation of Grass Silage

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Abstract

The aim of the current project was carried out to determine the effect of locust bean fracture on vitro and situ degradation of grass silage. Grass was ensiled with locust bean fracture (0, 1.5, 3.0, 4.5 and 6.0 on fresh basis) in plastic silos for 60 days. Ensiling of grass with locust bean fracture significantly affected the in vitro and situ degradation. Ensiling of grass with locust bean fracture significantly affected the gas production rate (c) and gas production (a) from quickly soluble fraction of grass silages when compared with control group whereas it has no effect on the gas production (b) from slowly fermentable fraction of grass silages. Ensiling of grass with locust bean fracture significantly increased quickly soluble fraction (a) of dry matter and slowly degradable fraction of dry matter (b) of grass silages. On the other hand the crude protein degradation of grass silages decreased with increasing level of locust bean fracture. As a conclusion, locust bean fracture can be used as a silage additive to prevent the extensive degradation of crude protein grass silage.

Keywords: Grass silage, Locust bean, in vitro degradation, in situ degradation

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In Ovo Injection of Branched Amino Acids Effects Hatchability and Hatching Chick Quality of Turkeys

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Abstract

The objectives of this study were to determine the influence of in ovo feeding of branched chain amino acids (BCAA, 3 L-leucine: 1 L-valine: 2 L-isoleucine) on hatchability, poult quality (Tona-score), yolk utilisation, relative assymetry (RA), feeding behavior and pectoralis muscles (PM) weight (from 24E to hatch). At 22 d 12 h of incubation (22E) except the control group (C: noninjected group), SA group received 1.5 mL 0.9% saline injection and BCAA group received 1.5 mL BCAA (0.2% BCAA in 0.9% saline) injection. Solutions were injected into the amnion using a 23-gauge needle to a depth of about 15 mm. Although in ovo BCAA decreased hatchability, it increased poult quality and weight at hatch ($P<0.05$). BCAA has had a reducing influence on relative yolk sac ($P=0.066$). BCAA poult. Begin to consume feed of BCAA poult has taken longer time than C and SA ($P<0.05$). In ovo BCAA improved the relative PM weights ($P<0.05$). These results indicated that in ovo feeding of BCAA enhanced by improving poult quality and muscle development and PM weight, except for hatchability.

Keywords: Poultry; hatching; in ovo feeding; amino acids.



Evaluation of the biocontrol potential of *Morina persica* L extract against *Ditylenchus dipsaci* and some plant pathogens

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Abstract

Plant pests and diseases cause significant yield losses every year. Synthetic chemicals are often preferred to control these pests and diseases. Although the chemical control is effective and cheap, there is negative effect on human health, environment and non-target organisms. Therefore, environmentally friendly, harmless for human health and non-target organisms new control methods are being investigated. Numerous plant species has potential for using as bio pesticide due to that contained nematicidal and antifungal compound. In this study antifungal and nematicidal effect of methanol extracts of *Morina persica* L. was examined. In antifungal activities, plant extract was evaluated against *Alternaria solani*, *Fusarium oxysporum f.sp.lycopersici* (FOL) and *Verticillium dahliae*. Experiment was carried out by the agar plate methods at concentration of 0.625, 1.25, 2.5, 5, 10 and 20 mg/mL. All concentration of *M.persica* plant extracts was showed antifungal activities against test fungi. The highest effect was recorded at 20 mg on FOL (60%) and *A.solani* (55%). Nematicidal activity, plant extract was evaluated against stem nematode *Ditylenchus dipsaci* (Kühn, 1857 under in vitro condition. Five concentrations (31.25, 62.5, 125, 250 and 500 ppm) of *M. persica* plant extracts were tested. Ten µl of the nematode suspension (50±5 nematode/ µl) were transferred to 1ml each concentrations in well of 24 well-plates in five replicate, while distilled water containing 1% DMSO used as a control. The nematodes exposed 24, 48, 72 and 96 hours in plant extracts and kept at 25 °C. *D.dipsaci* was considered dead if they did not move when touched a fine needle. *M. persica* plant extracts was found highly effective on *D. dipsaci*. The concentrations of 250 and 500 ppm were showed 100% mortality after 24 hours exposure. The plant extracts of *Morina persica* was first time determined the antifungal and nematicidal activities in this study, and has potential effect as a bio pesticide against plant pathogens and plant parasitic nematodes.

Keywords: *Morina persica*, *Alternaria solani*, *Fusarium oxysporum f.sp.lycopersici*, *Verticillium dahlia*, *Ditylenchus dipsaci*, plant extract



Evaluation Genetic Diversity of some Oat Cultivars and Landraces Grown in Turkey Using Microsatellites

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Abstract

Cultivated oat (*Avena* spp.) is native to Turkey and oat production is gradually increasing due to health benefit claims of oat. In this study five commercial (Kırklar, Fetih, Sarı, Arslanbeyand Kahraman) and five landraces (TL38, TL137, TL139, TL576, TL42 and TL452) were characterized by 24 microsatellites. According to the results, simple sequence repeat (SSR) markers were found highly polymorphic among the oat genotypes. AB_AM_488, AB_AM_897 and AB_AM_415 markers had the highest allele numbers (14 alleles), while AB_AM_503, AB_AM_814 and AB_AM_874 markers had the lowest alleles (5 alleles). The average allele number was 9.2. A dendrogram was made to evaluate the genetic distances among the oat genotypes. According to the dendrogram Kırklar cv. was separated from the other genotypes. And the rest was divided into two major groups as commercials and landraces. The kinship between TL42 and TL576 was 63% while the others were much more diverse and Fetih and Sarı cultivars were found 54.6% similar. TL139 genotype was found most diverse among landraces with 45% similarity. Results showed that the SSR markers used in the study were useful to identify oat genotypes and were able to determine diverse cultivars and landraces.

Keywords: Oat, Landraces, Microsatellites, Genetic diversity.



Determination of Recreational Potential of Botanic Gardens ‘Case of Batumi Botanic Garden’

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Abstract

Being the important parts of the green areas, botanic gardens are important tourism destinations as well as being special garden category where endangered plant species are protected, people are educated, awareness is raised and significant opportunities are offered in terms of recreation. In this context, Batumi Botanical Garden established in 1912 has been elected as a study area, which has scientific, educational and recreational functions, as one of the most important tourism destination. This study aimed to reveal recreational opportunities of the botanical gardens and introducing them. In this study, we had an interview with botanic garden managers, then we made on-side observations and taken photographs, finally determined the spaces which offered recreational opportunities. Some suggestion were proposed about recreational areas could be designed in addition to the existing recreational spaces in the botanical garden.

Keywords: Botanic gardens, Recreation, Tourism, Batumi.

The Effects of Different Harvest Dates on Some Fruit Quality Parameters and Health Promoting Compounds of *Morus alba* L. and *Morus nigra* L. Fruit

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Abstract

Mulberries are important fruits in terms of health-promoting compounds such as phenolics, antioxidant activity and organic acids. However, limited studies have addressed the changes of health-promoting compounds as well as fruit quality parameters during a harvest season which have a long duration about two months. This study was conducted to determine whether bioactive properties and fruit quality parameters may be altered significantly in a this long harvest season. White and black mulberry fruit were collected at commercial maturity stage fifteen day intervals (from 1st July to 1st August) in three location (İğdır, Tuzluca and Kağızman) of Aras Valley. The content of some selected organic acids and phenolic compounds were analysed on fresh fruit samples by HPCL/DAD. Antioxidant activity determined also on fresh fruit samples by Spectrofotometer. Fruit weight, width, length, fruit juice pH, titratable acidity (TA) and soluble solid content (SSC) were examined as some fruit quality parameters. Phenolic compounds and antioxidant activity were higher in black than in white mulberry at all harvest dates in three different locations. Phenolic compound levels and antioxidant activity increased towards the end of harvest season. Some fluctuations were observed organic acid levels during harvest season in Tuzluca and Kağızman locations while the acids increased towards the end of harvest season in İğdır location. Fruit weight, width and length decreased while titratable acidity increased at the end of harvest season in three location. On the other hand some fluctuations was observed SSC and pH content of fruit juice during the harvest season. As a result of the study, contrary to get smaller fruit, content of its phenolic levels and antioxidant activity increased towards the end of harvest season. Late harvested fruits may be more beneficial for human health compared to earlier ones in the same harvesting season.

Keywords: *Morus alba* L., *Morus nigra* L., health-promoting compounds, harvest dates

Investigation of Technological Features of Wood Based Acoustic Composite Panels

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Abstract

In this study, the bending resistance, modulus of elasticity in bending and density values of wood-based composite materials, which were designed as acoustical panels and were prepared in different geometries, were researched. Medium Density Fiberboard (MDF) was used as the wood-based material in the production of composite panels, whereas, urea formaldehyde (UF) adhesive was used as the adhesive in the production of composite panels. The middle layers of the experimental panels were prepared in 4 different geometries (triangle, hexagon, circle and link in a chain). The experimental specimens from the composite panels produced were prepared in accordance with the principles specified in the TS EN 310 standards. After the experiments, the analysis of variance was made with the objective of determining the effect of the type of materials on the technological specifications. They were separated into homogeneity groups with the Least Significant Difference (LSD) test. In accordance with the experimental results, it was found that the densities of the composite panels designed were lower at the ratio of approximately 20-30% compared to the control specimens. The resistance to bending of the newly designed composite panels decreased approximately 12%, whereas, the modulus of elasticity in bending values decreased approximately 19% compared to the control specimens.

Keywords: Woodbased composite panel, modulus of rupture, modulus of elasticity

Influences of Individual and Combined Applications of Treated Olive Mill Wastewater and Olive Bagasse Biochar on Soil Chemical Properties and Nutrient Content

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Abstract

Olive mill wastewater and olive bagasse are the main residues of olive oil production. World leading olive oil producing countries such as Spain, Greece, Tunisia, Syria and Turkey produce 30 million m³ wastewater annually. In this study, a waste management strategy was conducted with olive bagasse and olive mill wastewater which were obtained from a factory (Cine-Aydın) using three phases olive oil decanter. Treated olive mill wastewater (WW) and pyrolyzed (500 °C) olive bagasse (OB) were characterized and applied to soils in a pot experiment with the following experimental design: 1- Control; 2- 50 m³/ha WW; 3- 50 m³/ha WW + 10 t/ha OB; 4- 50 m³/ha WW + 20 t/ha OB; 5- 100 m³/ha WW; 6- 100 m³/ha WW + 10 t/ha OB; 7- 100 m³/ha WW + 20 t/ha OB. Maize plant (*Zea mays L. var. saccharata*) was cultivated on these soils. Influences of these treatments on soil pH, electrical conductivity, soil organic carbon, macronutrient (total N, plant-available P, K, Ca, Mg, Na) and micronutrient contents (Fe, Mn, Cu, Zn) were examined. We have found that both individual and combined applications of these materials increased total nitrogen, plant-available phosphorus and potassium contents of soil. Also, both biochar and wastewater applications increased soil electrical conductivity without causing a soil salinity hazard for crop production while soil pH was decreasing comparing to control. Plant-available Fe, Cu, Mn, Zn contents of soils were effected irregularly and considerably by treatments. This irregularity requires further investigations to resolve the mechanisms of these changes. In conclusion, we can say that both OB and WW applications may serve for sustainable agricultural practices by environmentalist waste management strategies without inherent toxicity risks of initial products.

Keywords: olive mill wastewater, olive bagasse, biochar, soil

Effects of Zeolite on Heavy Metal Mobility in Soil and Plant: Case of Nickel

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Abstract

In this study, the effects of clinoptilolite type of zeolite applications on nickel (Ni) mobility in soil and plant were investigated. For this purpose, a pot experiment was conducted with the texture of clay loam and sandy loam soils under controlled conditions. Wheat and corn plants were cultivated as indicator plants. 5 different doses (0-50-100-200-500 kg/da) and 2 different sizes (<200 µm ve 3-4 mm) of clinoptilolite were applied to soils. Ni contents of soils were determined with different extraction methods while Ni content of plants was measured after wet digestion by atomic absorption spectrometer (AAS) at the end of the experiment. The highest extractable Ni content was determined in soils which were treated by 400 kg/da clinoptilolite while control soils were found to have the lowest concentration. Fresh and dry yield of wheat and corn plants were raised by increasing doses of clinoptilolite in clay loam soils; however, no such effect was observed in plants cultivated in sandy loam soils. In addition, it can be stated that there was no significant relationship between clinoptilolite applications and plant Ni concentrations.

Keywords: Clinoptilolite, Wheat, Maize, Nickel

Fatty Acid Profiles of Oils Extracted from Fish Silage Treated with Formic Acid and Different Bacteria Strains

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Abstract

Fish discards and the waste generated in fish processing industries involve ecological and environmental concerns. They not only cause environmental pollution but also lead to the loss of valuable components such as proteins, lipids, and minerals. New approaches have been developed for the conversion of low-value fish processing discards into high-value products such as essential polyunsaturated fatty acids (PUFA), physiologically important peptides, saccharides, and other bioactive compounds. Production of fish silage is also an alternative and favorable technique to utilize fish discards because of its low investment, energy and labour cost. It can be easily prepared with the addition of acid or lactic acid bacteria (LAB). However, it is essential to separate lipid from fish silage for the improvement of its shelf-life. Therefore, the aim of the study was to investigate fatty acid profiles of silage made from Klunzinger's ponyfish (*Equulites klunzingeri*), treated with formic acid and LAB strains. This project was supported by Scientific and Technological Research Council of Turkey (TOVAG-213O166). The results of this study showed that the rates of SFA, MUFA and PUFA in raw fish were 35.31%, 31.39% and 18.92%, whereas their values were 35.70%, 30.24% and 18.32% in silage treated with formic acid, respectively. The ratios of SFA, MUFA and PUFA in silage treated with LAB strains were in the range of 35.81-36.48%, 30.74-31.68%, 17.71-18.42%, respectively. The level of SFA slightly increased in silage groups, whereas fluctuations were observed in the level of MUFA. Although PUFA content decreased in the silage groups, there were no significant differences ($P>0.05$) in PUFA contents among all groups except EPL group (*Equulites klunzingeri* fermented with *Lb. plantarum*). The results from this study suggest that fish oils extracted from fish silage can serve as potential sources of PUFA for human consumption or animal feed ingredients.

Keywords: Fatty acids, fish silage, discard, PUFA, EPA, DHA

An Alternative Management Method against Carob Moth, *Apomyelois* (=*Ectomyelois*) *ceratoniae* (Lepidoptera: Piralidae): Bagging with Tulle Fabric

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Abstract

Pomegranate is widely grown in the Aegean, Mediterranean and Southeast Anatolia regions of Turkey. There are many pests that affect pomegranate production and reduce yield and quality in Turkey. Carob moth, *Apomyelois* (= *Ectomyelois*) *ceratoniae* Zeller (Lepidoptera: Pyralidae) is a key pest in pomegranate orchards in Southeast of Turkey. The pest causes significant damage and reduces marketability of fruits, and is difficult to control with insecticides. Therefore, it is imperative to develop environmentally sound effective alternative management approaches. In this study, we aimed to evaluate the bagging with tulle fabric as an alternative management method against Carob moth. The study was carried out in a pomegranate orchard planted with local varieties in Central districts of Şanlıurfa province in 2016. In the study, 10 trees representing the orchard were selected for application. When pomegranate fruits reached 3-5 cm diameter (from the end of May to the beginning of June in Şanlıurfa conditions), 5 fruit per tree were taken into tulle bag and 5 fruit per tree were marked by taping with colored ribbon from fruit stem in order to control purposes. Carob moth infestation rate was determined in the middle of August and at the end of September by examining fruits bagged with tulle fabric and selected for control. As a result of the study, the infestation rate of Carob moth on pomegranate fruits was determined as 8% in bagged fruits in both August and September, while this ratio was determined as 28% and 68% on control fruits, respectively ($\chi^2=38,200$; $P<0.01$). According to the results obtained the study, the rate of infestation on bagged fruits was remained same while those were increased on control fruits from August to September. It is thought that the infestation rate of Carob moth with tulle bagged fruits caused by eggs laid before application. In the study, new infestations weren't determined on bagged fruits after August and this supported our idea. As a result, taking fruits into net bag can be an environmentally friendly alternative management against Carob moth in pomegranate orchards with the adjustment of the application time. It is also possible with this method to protect fruits from hail and sunburn like diseases caused by abiotic factors as well as other pests.

Keywords: Alternative management, *Ectomyelois ceratoniae*, Infestation rate, Pomegranate, Bagging with tulle fabric

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Tarihi Yedikule Bostanları (İstanbul) Peyzaj Tasarım Projesi

Nurhan KOÇAN

Bartın Üniversitesi Orman Fakültesi Peyzaj Mimarlığı Bölümü-Bartın

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Özet

Kentsel tarım kent halkının gerek ekonomik gerekse bir serbest zaman uğraşısı olarak tarih boyunca önemini koruyan bir konu olmuştur. Bununla birlikte kentsel tarım, kentsel yeşil alan sistemine katkısı ile ekolojik anlamda kentsel yaşam kalitelerinin artırılmasında önemli rol oynamıştır. Kentsel tarım alanlarının bu önemli rollerini bir örnek üzerinde somutlaştırmak ve günümüz yaşantısına dahil etmek amacıyla Tarihi Yedikule Bostanları çalışma alanı olarak seçilmiştir. Çalışma alanı İstanbul İli Fatih İlçesi sınırları içinde 1500 yıllık geçmişe sahip bir alandır. Bu alan kentsel tarımın en temel örneklerinden biri olarak kabul edilmektedir. İnsanlar yüzlerce yıl bu alanda sebze-meyve üretimi ve satışı yapmışlardır. Bu çalışmayla Tarihi Yedikule Bostanlarını yeniden düzenlemek, yenilenen çehresiyle alanın kentsel yeşil alan dokusuna katkısını artırmak, geçmiş bir kültürü devam ettiren kent halkına ekonomik kazanç ve hobi alanı kazandırmak hedeflenmiştir. Bu kapsamda tarihi çevre koruma ve kentsel tarım alanı düzenleme ilkeleri kapsamında çalışma alanının peyzaj tasarımı yapılmıştır. Peyzaj projesinin oluşturulmasında el çizimleri ile tasarım ana çizgileri oluşturulmuş Auto Cad 2016, SketchUp bilgisayar yazılımları ile projenin sunumu ve üç boyutlu görselleri üretilmiştir. Çalışmanın tarihi, kültürel ve ekonomik değerleriyle yenilenen alana, alan kullanıcılarına ve kente katkısı olacağı sonucuna varılmıştır. Çalışma buna benzer alanların kentsel yeşil alan sistemi ve toplum kullanımına kazandırılması yönünde örnek olabilecek niteliktedir.

Anahtar kelimeler: Kentsel tarım, kentsel yeşil alan, açık alan, peyzaj tasarımı, Tarihi Yedikule Bostanları (İstanbul).



Allelopathic Effects of Fleabane Species (*Inula viscosa* and *I. graveolens*) on Seed Germination of Some Weed Species

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Abstract

Weeds are one of the most important obstacles for crop production. Therefore, the control of weeds is of great importance. Chemical control is the first preferred method for this purpose and herewith herbicides are the most widely used pesticide group in the world. Herbicides carry risks in terms of human health and environment as they are in other synthetic pesticides. Because of that, investigations of alternative weed control methods are great importance. One of these alternative methods is using natural allelochemicals instead of synthetic herbicides for weed control. In this study, water extracts of two fleabane species (*Inula viscosa* (L.) Aiton. and *Inula graveolens* (L.) Desf.) are used to determine the effects on germination of some weed species. *I. viscosa* and *I. graveolens* are aromatic plants from Asteracea family and they are very common in Mediterranean region. *Vicia sativa* L. (common vetch), *Amaranthus retroflexus* L. (redroot pigweed) and *Portulaca oleracea* L. (purslane) are very harmful weed species and their seeds were used in the study. Water-extracts of fleabane species were obtained by keeping in pure water for 7 days at 4°C. For this purpose, flowering stems of fleabane species were collected in October 2016. The extract prepared in 1/10 ratio was filtered and diluted by pure water. Consequently, solutions were prepared at 50%, 75% and 100% concentrations and applied 10 ml for each petri dish. Only pure water was used for control. As a result of the experiment, *I. viscosa* was found more efficient than *I. graveolens*. All three species of weed were also affected from *I. viscosa* at different rates depending on dosage. Water extract of *I. viscosa* reduced germination ratio of redroot pigweed much more than others. Germination ratio of redroot pigweed decreased by 97%, 98% and 99% in the solution of 50%, 75% and 100% respectively. Concentrations of only 75% and 100% of the extract *I. graveolens* were effective on *A. retroflexus*. Other weed species were not affected by water extract of *I. graveolens*. *A. retroflexus* was determined to be more sensitive to water extracts of fleabane species than others. The results should be supported by field study.

Keywords: Allelopathy, Essential oil, Bio-herbicide

Live Weight and Reproductive Characteristics of Kıvrıcık Male Lambs Before and During Puberty

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Abstract

This study was aimed to determine the live weight and reproductive characteristics of Kıvrıcık male lambs before and during puberty. Live weight, testes growth, sexual behaviour and sperma characteristics were studied in 15 lambs born in one week under semi intensive conditions. The data on all examined characteristics were recorded biweekly. The age and live weight when first interest observed to females were found as 150.20±3.50 days and 21.34 kg, respectively. The first appearance of spermatozoa in the ejaculate or urine occurred at 237.46±13.19 days of age when the lambs had attained a live weight of 24.00±1.07 kg. The age and live weight at first collection of an ejaculate with 10-30% motility were 294.80±27.66 days and 26.81±1.29 kg, respectively. The age and live weight at first mount were 409.71±39.95 days and of 35.35±1.96 kg, respectively. Scrotal length, scrotal circumference, testes length and testes diameter of lambs at the age of first appearance of spermatozoa in the ejaculate or urine were found as 10.6, 18.94, 6.09 and 3.04 cm, respectively. The same characteristics at the age of first collection of an ejaculate with 10-30% motility were 12.70, 23.07, 7.42 and 3.93 cm, respectively. The means for ejaculate volume, sperm viscosity, mass motility, sperm motility, concentration of sperma, proportion of live spermatozoa and proportion of abnormal spermatozoa when the lambs had attained the age of first collection of an ejaculate with 10-30% motility and the production age of two consecutive ejaculate with 50% minimum motility were found as 0.393 ml and 0.450 ml, 1.46 and 2.14, 27.33% and 56.42%, 1.06 and 2.14, 0.586 (x10⁹) and 1.294 (x10⁹), 30.0% and 15.42% and 11.06% and 6.21%, respectively. The results indicated that there are wide variations in the Kıvrıcık breed and among the other breeds related to pubertal reproductive characteristics of male lambs.

Keywords: Kıvrıcık, male lamb, Puberty, Testicular characteristics, Sexual behaviour, Sperma characteristics

The Analysis Of The Effects Of Open Door Conditions On The Physical And Mechanical Characteristics Of Sessile Oakwood Impregnated With Natural And Artificial Substances

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Abstract

In this study, it is aimed to analyze the changes on some physical and mechanical characteristics of sessile oakwood under the effects of open door conditions for one year by impregnating with natural and artificial substances. Pine tannin and acorn are preferred as the natural impregnation material, imersol aqua and lumber aqua are chosen as the synthetic impregnation material. D4 adhesion was used in the experiment on the determination of the bonding resistance parallel to fibers. In the determination of bending resistance and elastic modulus, the samples impregnated with acorn gave better results in comparison with samples impregnated with other substances and the control samples which are not subject to impregnation. The highest value is detected at samples impregnated with timber care aqua in compression resistance parallel to the fibers. In the experiment on the determination of bonding resistance parallel to fibers, close values are found between control samples and samples impregnated with imersol aqua. Samples impregnated with pine tannin is stated to give better results than other impregnated samples in the determination of screw retention strength.

Keywords: Impregnation, Sessile Oak, Pine Tannin, Immersol Aqua, Timber Care Aqua



The Determination Of The Physical And Mechanical Properties Of Scotch Pine By Impregnating With Oak Tannin And Timber Care Impregnation Materials

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Abstract

In this study, it is aimed to test the preservative impregnation characteristics of the scotch pine wood type as a consequence of impregnation with natural and chemical impregnation materials. The impregnated materials have been kept in outdoor conditions for one year and it is aimed to reveal which one of the impregnated materials is more advantageous by analysing the physical and mechanical properties of materials impregnated under these circumstances. The scotch pine (*Pinus sylvestris* L.) is used as the wood material in this study. The acorn has been used as the natural impregnation substance and timber care aqua as the chemical impregnation material. In this study, physical and mechanical tests regarding air-dried density, full dried density, moisture content, retention amount, bending resistance, elastic modulus, bonding resistance parallel to the fibers, compressive strength parallel to the fibers, and the screw holding resistance have been carried out. According to the results regarding the physical properties; full dried density and retention amount of the scotch pines have been confirmed to be higher than control samples in terms of the material, and the air-dried density, moisture content and retention amount of acorn specimens have been found to be higher than the timber care aqua samples in terms of impregnation materials. As for mechanical properties, the scotch pine's elastic modulus and compressive strength parallel to the fibers have been stated to be higher than the control samples in terms of material and bending resistance and bonding resistance parallel to fibers of acorn samples have been detected to be higher than timber care samples in terms of impregnation materials. As a result, it is determined that the wood materials impregnated with natural impregnation materials are in a state in which they can be compared with the wood material impregnated with a chemical substances.

Keywords: Scotch pine, Impregnation, Wood, Oak Tannin, Timber Care Aqua

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Effects Of Different Boron Doses On Yield, Quality And Leaf Nutrient Content Of Isabella (V. Labrusca L.) Grape Cultivar

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Abstract

This study was carried out between 2013 and 2014 in viticultural area of Giresun Hazelnut Research Institute. In this experiment, the effects of four different boron doses (Control, 0.1%, 0.2%, 0.3%) at two different period (a week before flowering and a week after flowering) on yield and leaf nutrient content were investigated in Isabella (*Vitis labrusca* L.) grape cultivars. Increasing B treatments increased yield (g), cluster weight (g), cluster width (cm), cluster volume (ml), berry homogeneity in cluster, amount of grape juice (g), leaf area (cm²) and chlorophyll content. Boron treatments did not have any significant effects on number of seeds per berry, berry length (mm) and phenological periods. The greatest yield (g), cluster length (cm), volume (ml), size (cm²), width (cm), berry width (mm) and leaf area (mm²) were obtained from 0.3% boron treatment. Only 0.2% boron treatment decreased seed weight of berries. The greatest juice yield was obtained from 0.1% boron treatment. All boron treatments had significant effects on leaf nutrient content and generally increased nitrogen, phosphorus, calcium, magnesium, boron, zinc, copper and manganese concentrations. However, boric acid treatments decreased iron and potassium concentrations of the leaves. The boron applications on the leaves were positive in terms of yield, cluster, berry and amount of grape juice. 0.3% boric acid treatment were determined to appropriate for increasing of yield, quality and leaf nutrient content in Isabella grape cultivar.

Keywords: Boron, Foliar fertilization, Grape, Nutrient content, Quality, Yield,



Nutritional Properties of Quinoa (*Chenopodium quinoa Willd.*) and Its Usage in Bakery Products

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Abstract

Quinoa (*Chenopodium quinoa Willd.*) is an endemic plant species peculiar to South America. Different names such as jupha, supha, suba and daheure used to refer to quinoa. But in Bolivia, Peru, Ecuador, Argentina and Chile, it is especially called as quinua and quinoa. Although quinoa is not belong to the Gramineae family, these seeds can be milled into flour and used as a cereal crop which therefore it is called also as a pseudocereal. Quinoa has high nutritious value that it has rich in proteins, lipids, fibres, vitamins (B, C and E) and minerals (Fe, Ca, Mg, K). Protein content of quinoa seeds ranges between 14-18%. Due to their balanced amino acid composition with high content of essential amino acids, quinoa proteins are known as one of the high-quality proteins. Additionally, quinoa dietary fibre ranges between 7-10% which is similiar to grains as well as its soluble fiber content is between 1.3-6.1%. According to its high nutritional value, United Nations has recently assigned the 2013 as "International Year of Quinoa". Bakery products have been mostly enriched with quinoa. Especially, pastas, breads, cakes, biscuits and breadsticks were the bakery products which quinoa seeds were used in the recipes. These studies conclusively showed that quinoa is a potential source for increasing the nutritional value of the bakery products.

Keywords: Quinoa seed, bakery products, enrichment.



The effects of outdoor conditions on the combustion properties of scotch pine (*Pinus sylvestris* L.) wood

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Abstract

The wooden material, which is a light and durable material, has also undesirable properties such as contagion from outdoor air conditions and combustion properties. This research is conducted with the intent of determining the combustion properties of wood material left in outdoor conditions for one year. For this purpose, samples prepared from scotch pine (*Pinus sylvestris* L.) according to ASTM-E 160-50 are first impregnated with tanalith-E (T) and wolmanit-CB (W) in compliance with ASTM-D 1413-76, and then are varnished with synthetic (St) and water based (wb) varnish according to ASTM-D 3023. The weight loss, the collapse time in combustion, the total combustion duration, the temperature values in the combustion levels are identified by subjecting pieces, which are left in outdoor air conditions, to combustion tests according to the principles specified in ASTM G7-05 standard by the end of the year. According to the results, the impregnation materials have decreased the collapse time by %7-26 in the combustion, increased the total combustion duration by %14-34, and the varnishes have raised the collapse times and reduced the total combustion durations.

Keywords: Wooden material, impregnation, varnish, combustion, external environment

Polysaccharides of mushrooms naturally growing tree: Evaluation of their antioxidant and anticholinesterase activities

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Abstract

Mushrooms are consumed by human for centuries because of their delicious taste and aroma. [1]. Many bioactive compounds, such as polysaccharides, phenolic compounds, sterols, terpenes and ceramides have been isolated from mushrooms. Among these compounds, polysaccharides are responsible for various health benefits. It was reported that polysaccharides have immunostimulatory, antioxidant and anti-tumour effects, also decreases asthenia symptoms, caused by the tumor necrosis factor (TNF) and anemia[2,3]. Oxidative stress causes various diseases including cardiovascular, neurodegenerative, inflammatory diseases, cancer and diabetes. Oxidative stress is linked to Alzheimer's disease and previous studies shows that regular use of antioxidants reduces the risk of this disease. Therefore, in this research, we determined antioxidant and anticholinesterase activities of polysaccharides obtained from hot water extracts of *Porodaedalea pini*(PP), *Fuscoporia torulosa*(FT) and *Phellinus igniarius*(PI) mushrooms. β -carotene-linoleic acid, DPPH[•] free radical scavenging activity, ABTS^{•+} cation radical scavenging activity, CUPRAC and metal chelating activity assays were used for antioxidant activities while anticholinesterase activities were measured by Ellman method. *P. pin* showed the highest antioxidant activity in all studied tests except for CUPRAC assay. Additionally, these three mushroom polysaccharides exhibited higher lipid peroxidation inhibitory activity than BHA and α -tocopherol used as antioxidant standards. As for anticholinesterase activity, polysaccharides were decreased in order of PI>FT>PP against acetylcholinesterase enzyme whereas they were decreased in order of PH>FI>FT against butyrylcholinesterase enzyme.

Keywords: Mushroom, Polysaccharide, Antioxidant activity, Anticholinesterase activity

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Impact of several impregnation materials and varnishes on gases analysis of scotch pineleft in the weather conditions

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Abstract

The most objectionable environment for the wood material is outdoor conditions. This study is carried out to determine the amounts of oxygen, carbon monoxide, carbon dioxide and nitrogen oxide emitted by the combustion of wood materials, which are left in the weather conditions. For this purpose impregnation materials Wolmanit-CB and Tanalith-E which are commonly used for wood protection, and synthetic and water-based varnishes as varnish types are studied. The results indicate that CO is emitted. It is confirmed that varnishes show a lowering effect and the impregnation materials shows an additive effect in the combustion caused by fire, spontaneous combustion and combustion in ember state. As a conclusion, it is observed that impregnation materials Wolmanith-CB and Tanalith-E and synthetic and water-based varnish types have an important effect on the gas values of wood material occurring during the combustion.

Keywords: Gas analysis, Tanalith-E, Wolmanit-CB, Scotch pine, Varnish

Siirt İkinci Ürün Koşullarında Bazı Susam (*Sesamum indicum* L.) Çeşitlerinin Verim ve Verim Unsurlarının Belirlenmesi

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Özet

Bu araştırma, Siirt Üniversitesi Kezer yerleşkesi Ziraat Fakültesi deneme alanında 2015 yılında ikinci ürün koşullarında bazı susam (*Sesamum indicum*L.) çeşitlerinin verim ve verim unsurlarının belirlenmesi amacıyla yapılmıştır. Denemede 13 adet tescilli susam çeşidi materyal olarak kullanılmıştır. Deneme, tesadüf blokları deneme desenine göre dört tekerrürlü olarak yürütülmüştür. Ön bitki olan buğday hasadından sonra ekimler elle yapılmıştır. Araştırmada; bitki boyu, bitkide yan dal sayısı, bitkide ilk dal yüksekliği, bitkide kapsül sayısı, kapsüldeki tane sayısı, 1000 tane ağırlığı, tohum verimi, yağ oranı, yağ verimi ve protein oranı gibi özellikler incelenmiştir. Araştırma sonucunda; denemede materyal olarak kullanılan 13 çeşitten 10'unun Siirt ili ekolojik koşullarına adaptasyon sağlayamamıştır. Siirt ili ekolojik koşullarına adaptasyon sağlayamayan bu 10 çeşit (Tan 99, Sarısu, Tanas, Özberk 82, Kepsut 99, Muganlı 57, Baydar 2001, Osmanlı 99, Orhangazi 99 ve Cumhuriyet 99) Ege ve Akdeniz bölgelerinde yaygın olarak tarımı yapılan susam çeşitleridir. Bu susam çeşitleri 6-7 yapraklı oluncaya kadar normal gelişmelerini devam ettirmişlerdir. Daha sonra yapraklarda sararmalar baş göstermiş, bitki boğum araları oldukça kısa kalmıştır. İlk görünüşte bitki besin elementi eksikliği gibi bir görünüm ortaya çıkmıştır. İlerleyen günlerde yaprakların fotosentez yapma kabiliyeti tamamen ortadan kalkmıştır. Bu süre zarfında parseldeki bitkiler tamamen kurumuştur. Diğer üç çeşit ise daha çok Güneydoğu Anadolu Bölgesi için önerilen çeşitler olup (Arslanbey, Hatipoğlu ve Boydak) bu çeşitlere ait bitki boyu 61,3 - 97,6 cm, bitkide yan dal sayısı 2,7-6,9 adet/bitki, bitkide ilk dal yüksekliği 2,9-9,9 cm, bitkide kapsül sayısı 50,2-128,1 adet/bitki, kapsüldeki tane sayısı 53,5-72,0 adet, 1000 tane ağırlığı 2,7-3,3 g tohum verimi 59,6-116,1 kg/da, yağ oranı % 45,24-50,67, yağ verimi 27,2-56,2 kg/da, protein oranları % 22,1-24,0 arasında değişiklik göstermiştir. En düşük tohum verimi 59,6 kg/da ile Hatipoğlu çeşidinden elde edilirken, en yüksek tohum verimi ise 116,1 kg/da ile Arslanbey çeşidinden elde edilmiştir. Bu çalışma ile susamda çevre genotip interaksyonun çok belirgin bir şekilde ortaya çıktığı söylenebilmektedir. Ayrıca ıslah ve çeşit geliştirme programlarında bölgesel çalışmaların da oldukça önemli olduğu söylenebilir.

Anahtar Kelimeler: Siirt, Susam, Çeşit, Adaptasyon, Verim,

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Chemical analysis of polysaccharides extracted from four wild mushrooms

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Abstract

Mushrooms are sources of polysaccharides that exhibit many biological activities including antioxidant, anti-tumour, immunomodulatory and hypoglycemic properties [1]. Herein, we describe chemical constituents of polysaccharides obtained from hot water extract of four wild mushrooms namely; *Fomes fomentarius* (L.) Fr. (FF), *Ganoderma adspersum* (Schulzer) Donk.(GA), *Phellinus igniarius* (L.) Quél. (PI) and *Pleurotus ostreatus* (Jacq.) P. Kumm.(PO) by FT-IR, carbohydrate content, monosaccharide composition and molecular weight. The evidence of functional groups in polysaccharides proved by the appearance of the peak which was derived from the stretching vibration using FT-IR. The carbohydrate contents were different followed the order of PI>FF>GA>PO polysaccharides. The monosaccharide composition exhibited that glucose, galactose, and mannose were the major monosaccharide units in the four polysaccharides by GC-MS. The average molecular weights of polysaccharides were calculated by the calibration curve with standard dextrans using HPLC-DAD.

Keywords: Wild mushrooms, Polysaccharide, Chemical content, GC-MS, HPLC-DAD

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Usage Graphical Techniques in Statistical Analyses of Massive and Complex Data Sets

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Abstract

Developments in science and technology enable the researchers to set up more complex experiments and measure different variables of many experimental units in order to get more detailed and reliable information about responses. Although it is a great advantage to obtain more detailed and reliable information about the effect of interested factor(s), it also may cause to run into different challenges especially at the stage of statistical analysis. Since there will be many measures of experimental units in terms of interested factor(s), the researchers will have to work with a massive and complex data sets. For such cases, due to the differences of the type of the measured variables, number of factors and number of experimental units or sample size, usage of the classical tests such as ANOVA, Correlation and Regression Analyses, Chi-Square Analysis will not be appropriate for analyzing data sets. There are different graphical methods and approaches have been proposed for these kinds of cases. For example, depending on the aim of the researchers and structure of the data sets, Analysis of Mean (ANOM), Multidimensional Scaling (MDS), Correspondence Analysis (CA), Classification and Regression Tree (CART), Optimal Scaling (OS), Artificial Neural Networks (ANN), Chernoff Face, Random Forest (RF) might be used efficiently in analyzing massive and complex data sets. The main objectives of this study are to show: a) when and how to use these graphical techniques instead of classical tests at the stage of statistical analysis, b) advantageous of these methods over the classical tests, and c) how to interpret and report the results. For this purposes, three different data sets have been analyzed by using ANOM, CART, MDS, and CA.

Keywords: Massive and complex data sets, CART, MDS, Correspondence analysis

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15-17 May 2017

Microencapsulation of Ginger Oleoresin by Ionic Gelation Method

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Abstract

Ginger is widely used as a flavoring agent in beverages and many food preparations. Along with that, it is associated with a number of health benefits which has led to its comprehensive use in a variety of commercial natural products. Ginger has a very long history in the medicine of the Far East countries. Medicinal properties include anticancer antioxidant, anti-inflammatory and antidiabetic activities. Microencapsulation is a technique that has been utilized to protect the core material from adverse environmental conditions and It is employed to preserve the stability, bioactivity and bioavailability of active component. Selection of encapsulating or coating materials is the most important step in efficiency of the encapsulation process. The experiment was conducted in two stages: extraction of ginger oleoresin and microencapsulation of ginger oleoresin. Lyophilized ginger powder was extracted using a solvent extraction by dissolving it in ethanol at a ratio of 1:10. Then the extract was separated from the pulp and evaporated using a rotary vacuum evaporator. This oleoresin was then used as an active ingredient in the micro-encapsulation. Suspension of coating materials was prepared by mixing a solution of sodium alginate with a ratio of 0.5, %1 and %1.5 in distilled water. Preparation of ginger oleoresin emulsion was done by adding the ginger oleoresin into suspension of the coating materials at concentrations of 10%, and mixed together using a Ultra-Turrax homogenizer at a 4.000 rpm for about 10 minutes. The ginger oleoresin emulsion and coating solution mix was then dropped to the calcium chloride solution, withinjector pump at different flow rates. Capsules of sizes 300-500 microns were obtained at different flow rates. As the concentration of the coating material increases, the stability of the capsule increased. Capsules with the best size distribution and morphological characteristics were obtained at a flow rate of 1 ml / min. Therefore, sodium alginate is considered as an effective microencapsulating agent. Microencapsulated ginger oleoresins may be used as a novel food ingredient.

Keywords:Microencapsulation, Ginger, Ionic Gelation

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A Research on the Determination of the Contributions of the Good Agricultural Practices at the Citrus Production on the Agricultural Enterprises From the Points of Technology and Economy

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Abstract

Good Agricultural Practices (GAP) are agricultural production methods which are applied for the goals of: to realise an agricultural which doesn't harm to the healths of the human beings and the animals; the protection of the natural resources; traceability and sustainability in agriculture and the food safety. In our country in recent years GAP are come out as a production method which is supported by the state at a lot of agricultural activities and is supported by the projects which are applied at different areas. As an example in Hatay totally 29 producers, 18 producers (in an area of 1011 da) in 2014 and 11 producer (in an area of 540 da) in 2015, are certified by converting to good agricultural practices in the scope of "The Dissemination and Development Project of GAP in Citrus Growing". In this study, in the case of Hatay by applying a field research the technical and economical aspects of this 29 enterprises before and after the certification are determined and evaluated statistically. At the end of the research it is determined that: the agricultural enterprises has increased their market shares in respect to the periods before the certification; has used the agricultural machineries more consciously and especially in agricultural spraying the effectiveness and affordability are improved distinctly.

Keywords: Citrus growing, Good Agricultural Practices, Technological and economical contributions

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15-17 May 2017

Effect of *cis*-butenedioic acid on forage quality, *in vitro* digestion values, carotenoid and nutrient matter composition and of maize silage

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Abstract

The *cis*-butenedioic acid or maleic acid is a dicarboxylic acid and a precursor of fumaric acid. This study aimed to determine the effects of *cis*-butenedioic acid (*cBA*) on forage quality, *in vitro* digestion values, carotenoid and nutrient matter composition and of maize silage. Maize herbage was ensiled either without (control group: *cBA*0) or with three different dosages of *cBA*, 1.0 % (*cBA*1), 2.0 % (*cBA*2), and 3.0 % (*cBA*3) w/w of the fresh material for 60 days. The *cBA* did not change the dry matter (DM), ash, crude protein (CP), ether extract (EE), acid detergent fiber (ADFom), acid detergent lignin (ADL) or total digestible nutrient (TDN) content of maize silages. In addition, neutral detergent fiber (aNDFom) content decreased linearly by the increasing dose of *cBA* ($P=0.001$). Silage Fleig point, estimated digestible dry matter (DMD) and pH did not change by *cBA* supplementation ($P>0.05$). However, relative feed value (RFV), relative forage quality (RFQ) and non-structural carbohydrate (NSC) of maize silage increased linearly by *cBA* ($P<0.001$). The *in vitro* total gas and methane production, metabolisable energy (ME), net energy lactation (NE_L) and organic matter digestible (OMD) did not change by *cBA* supplementation. The *cBA* supplementation to maize herbage at ensiling stage decreased linearly α -carotene, β -carotene, γ -carotene, lycopene, zeaxanthin content ($P<0.01$). In addition, lutein and total carotenoids content in maize silage increased linearly by *cBA* supplementation to herbage ($P<0.01$). It was concluded that *cis*-butenedioic acid addition to forage at ensiling stage could increase forage quality values (RFV and RFQ), and total carotenoid and lutein content. In addition, the *cBA* is not negative effects on silage nutrient composition or *in vitro* digestion in ruminant of maize silage.

Keywords: carotenoids, *cis*-butenedioic, forage quality, *in vitro* gas production



Citrus Production and Market Profile in the World and Turkey

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Abstract

The growing field and production amounts are increasing every year in the world and in Turkey parallel to the diversification of the products of citrus fruits. The citrus fruits are the most grown and consumed fruit group in the world. According to the FAO data 136 million tons of citrus fruits are grown at about 9,7 million hectares area on the world. Turkey is the 9th place at world's citrus production with a 3.783.517 tons product on 130.452 ha growing area. Turkey's citrus fruits exportation is realised as 1.536.737 tons in 2015 and 842 million dollars income is obtained. Turkey as one of the most important producers in the world but has not yet accessed to the markets of a lot of citrus importive countries. Only the 41 % of the total production could be exported. The hardships in the production and exportation are affecting the sector negatively. The aim of this research is seeking the ways to increase the exportation by making market analyses in the world and in Turkey, to bring out the hardships and to transmit them to the related ones of the sector. In this research, the existing situation of the citrus fruits production in the world and in Turkey is evaluated within the perspective of the statistical informations, the determinations and estimations are made about the recent and future profiles of the market are made and suggestions are put forward. It has been determined that the disease pest risk factor that affects the amount of production is 9,08% and 10,30% of the storage risk factor in the product market as a result of negotiations with farmers

Keywords: Citrus fruits, Citrus fruits production in the World and in Turkey, Market, Exportation

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Determination of Potential of Amasya City in Terms of Gastronomy Tourism

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Abstract

In recent years, the appreciation of the gastronomy concept of eating and drinking has played an important role in determining touristic destinations. For tourists, the quality of the food and beverage on the go is important in the selection of the motivations and tours of their travels. Cultural features are part of the gastronomic tourism cannot be ignored. Local foods, culinary culture, traditional handcrafts, folk dances, which express the lifestyle of the cities, attract the attention of tourists. The purpose of the study, gastronomy tourism is to identify the potential of gastronomy in the city of Amasya. In this context, observation will be made through screening and document analysis, which is one of the qualitative research methods. Domestic and foreign articles, theses, internet sites related to gastronomy concept will be examined. At the same time, the field studies will be carried out and the markets and shops where the food and drink places, bakeries, traditional and local products are sold and shops offering the opportunity will be determined and mapped in the Amasya city example.

Keywords: Gastronomy Tourism, Urban Tourism, Amasya, Turkey.

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Examination of Recreation and Tourism Possibilities of Trout Production Farms, Sample of Maçka District in Trabzon

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Abstract

Aquaculture is shown as the future sector of growing and is considered as an alternative to food production. According to the United Nations Food and Agriculture Organization (FAO) officials, the most developed food production sector in the world over the last decade has been the aquaculture sector. Trout breeding farms also offer opportunities for recreation and tourism, thanks to the characteristics of the places they are built besides the seeds. In this study, the coverage area, total green area, total trout plant area, fish production income, recreation and tourism income for the 6 trout farms in Trabzon Maçka District within the boundaries of the province, which are continuing to serve fish production and recreation and tourism, accommodation capacity etc. The information will be collected. This information field work will be done and the interviews with the business owner and employees will be done. As a result of the study, planning and design proposals will be presented for environmental management of trout farms.

Keywords: Trout Farms, Trabzon, Recreation, Tourism.

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Pulsed Electric Field Processing Of Licorice Drink; Effects On Microbial Inactivation And Bioactive Compounds

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Abstract

Licorice drink (sherbet) is one of the most consumed traditional drinks especially in south and south eastern cities in Turkey. It is prepared by the immersion of the dried licorice (*Glycyrrhizaglabra*) in the form of hairy roots for couple hours at room temperature, removal of roots from liquid part and cooling it down for couple hours. Licorice sherbet contains glisirizin fifty time sweeter than normal sugar in addition to flavonoids, saponins and cumarin. On the other hand, shelf-life of the fresh drink is very short due to spoilage caused by yeast and soil borne bacteria. Heat pasteurization provides extension of shelf-life but causes undesirable changes in both physical and sensory properties. Therefore, processing of licorice drink by pulsed electric fields (PEF) and mild heat+PEF in comparison with heat processing with measurement of changes in physical and sensory properties, and microbial inactivation was prompted in this study. While samples treated by PEF and PEF+mild heat revealed no significant difference for the measured properties of pH, titratable acidity, conductivity, color, total antioxidant capacity and total phenolic substance content as well as sensory properties, heat treated samples presented significant difference both in physical and sensory properties. Inactivation of total aerobic mesophilic bacteria (TAMB) and total mold and yeast in addition to inoculated *Escherichia coli* O157:H7 and *Salmonella* Enteritidis increased with increased electric field strength and heat treatment temperature. It was revealed that PEF can successfully be applied for the processing of licorice drink with reasonable microbial inactivation without significant changes in physical and sensory properties.

Keywords: pulsed electric fields, Licorice drink, microbial inactivation, food quality



Impacts of the New Metropolitan Municipality Law on Those Living in Rural Areas: The Case of Kocaeli

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Abstract

With the enactment of the Metropolitan Municipality Law no. 6360 in 2012, the service area of metropolitan municipalities was extended to the provincial administrative boundaries, without distinguishing between rural and urban areas in metropolises. Thus, the legal entity status of villages and towns in metropolises was abolished and they were transformed into districts. In the circumstances, the municipalities which had been previously delivering services to urban areas started to have new tasks such as delivering municipal services to districts that were previously villages as well as agricultural infrastructure services, livestock investments and supporting of breeding activities. The present study explores the impacts of the new metropolitan municipality law on those living in rural areas. The village of Nüzhetiye in Gölcük, Kocaeli was selected for this purpose. We asked the residents of Nüzhetiye, which had become a district with the enactment of the law in question, whether they were aware of the new law and whether they were affected positively or negatively. In light of the findings obtained, some recommendations are made in the final section.

Keywords: Metropolitan Municipality Law, rural area, agricultural activity, local administration, district



Paper-based sensing platforms for Environmental and Food Analysis

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Abstract

Due to the extensive public concerns and legal restrictions, it is essential to continuously track food and environment, and to get fast and reliable results in order to protect both the consumer and the manufacturer. In general, chromatographic and spectroscopic methods were used for the detection of food components, additives, residues, contaminants and biological activity. But these conventional methods are time-consuming and require expertise and expensive chemical and instrumental facilities. For these reasons, rapid test methods are considered as a requirement. Among the rapid test methods, paper-based sensing platforms play an important role and there is an increasing interest on paper-based sensing. Paper used as main material at manufacturing process because of its ease of find, allowing passive fluid transport and its chemical-biochemical compatibility. The paper-based microfluidic platform created by benefiting from these properties of paper performs the analysis with existing systems with a simple manufacturing process at low cost and portable size. Paper-based sensing platforms consist of channels allowing and controlling capillary fluid flow, and regions on which single and/or multi assays are performed. Moreover, using smart phones as the read-out device allow performing affordable, rapid and robust quantitative diagnostic tests. As a result, paper-based sensing platforms combined with smart-phones are promising candidates for point-of-care applications and they meet the ASSURED criteria.

Keywords: Paper-based sensing, Safety, Quality, point-of-care



Mercury and Selenium Interaction in Fish

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Abstract

As a result of increased pollution with industrialization, seas and oceans are contaminated with mercury. Methylmercury (MeHg), the organic form of mercury, is highly toxic to humans and it has been regarded as an important public health concern. It is transferred via food chain and may accumulate in fish. Fish consumption is the most important source methylmercury for the public and high amounts of MeHg can cause a variety of adverse health effects in people. Large-scale food poisoning cases have been reported due to the consumption of mercury-contaminated fish. Fish is also an important source of dietary selenium which is an essential trace element for humans. Several studies have shown that selenium protects the organism from organic and inorganic mercury, due to the metabolic interactions. It has been suggested that selenium/mercury molar ratios above 1 provide great protection for numerous adverse effects of mercury. Therefore, the mutual antagonism between these two elements has become more important in fish and seafoods. In this study;mercury and selenium interaction in fish is highlighted. The results of studies made so far on mercury and selenium interaction in fish were evaluated in terms of public health and food safety. The studies in this area can provide beneficial insights into reducing the risks of fish consumption and ensuring more safe consumption for the public.

Keywords: Selenium, mercury, fish, seafood



Plant Ergonomics in Modern City Design: An Example of Trabzon

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Abstract

Urban spaces are places that fulfill their psychological needs, allowing people to socialize as part of social life. In this respect, urban areas need to be designed and implemented with qualities that are reliable, appropriate and accessible, flexible and understandable. The user needs to be in accordance with the anthropometric measurements of all the external elements of the human being in every respect. Urban spaces are functionally functional as well as aesthetically pleasing in the design phase, but are made possible by the ergonomic suitability of the exterior components. Said outdoor components are made up of natural and artificial materials that define and shape the space. Urban green spaces affect urban ecology positively while at the same time improving people's quality of life. Plants are the most important natural elements of green areas. In this study, it will be investigated the ergonomic suitability of vegetable structure which is the key element in terms of landscape architecture in urban green spaces. In this context, the existing plants used in Atapark located in Trabzon city which is determined as a study area have been evaluated from ergonomic point of view. The plants have positive and negative aspects from the design elements in terms of line, form, size, color and texture. In addition, according to the places of use of plants will be evaluated according to the anthropometric measures of people. As a result of the evaluations, determined problems were revealed and solution suggestions were made by making specific visualizations.

Keywords: Plant ergonomics, urban spaces, Trabzon

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Profitable Approach in Cotton Cultivar Preferences

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Abstract

This research was conducted to determine the best cultivar or cultivars to be able to get the highest income in the 10 cotton cultivars are commonly grown in Harran Plain conditions (Stoneville-468, Stoneville-453, Stoneville-373, BA-440, B-119, Carisma Candia, DP-499, DP-396 and Uğur) and to rank varieties in terms of yield, plant characteristics and fiber quality parameters, market price x yield = income per decare. This study was carried out at the trial site of Agricultural Faculty of Harran University in Eyyübiye Campus in 2014 growing season. Cultivars were sown on May 2, 2014 with the randomized block experimental design with four replications. Experimental plots were consisted of four rows with 70 cm row spaces and 15-20 cm intrarow spaces. As a result of study; it was found that Stoneville-468 and BA-440 cultivars were promising in terms of seed cotton yield and profitable approach per decare. BA-440, BA-119 and Uğur cultivars were placed in first orders in terms of first harvest ratio, Stoneville-468 in terms of number of boll per plant, DP-499 and Carisma in terms of number of sympodia, Candia in terms of plant height, Stoneville-373 and Candia in terms of seed cotton yield per boll, Carisma, Candia, BA-440 and DP-396 in terms of ginning outturn, Candia, Uğur and Stoneville-453 in terms of seed index, BA-440 in terms of fiber strength and fiber fineness, Uğur, Stoneville-373 and Stoneville-453 in terms of fiber length, and Candia and Carisma in terms of seed cotton price.

Keywords: Cotton, cultivars, yield, profit, fiber properties

Not: Bu makale Zeynep YILDIZ'ın "Pamukta Çeşit Tercihinde Dekara Gelir Yaklaşımı" adlı Yüksek Lisans tezinden üretilmiştir.

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Non-destructive and Semi-destructive Testing Techniques for Assessing Wood Members in Structure

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Abstract

Wood deterioration is one of the most common damage mechanisms in historic timber structures and often inflicts damage internally. The deterioration of structural members results in changes in geometry and load-bearing capacity. Thus, periodic inspection of timber elements in structures is of great importance in terms of the life and property safety. A visual inspection has historically been the most common form of investigation for timber structures. This poses many problems when inspecting timber elements since often the damage is internal, leaving no visible signs of decay on the surface. Non-destructive and semi-destructive testing and evaluation (NDT&NDE) techniques provide a great opportunities to understand the physical condition and the load bearing capacity of the structural members of the existing constructions without causing any significant damage on the member. From the lasts decades, new non-destructive evaluation technologies have been developed in order to evaluate the condition and mechanical properties of wood. This paper discusses recent advances in nondestructive and semi-destructive techniques used for in-place evaluation of wood members in structures. Much attention is devoted to acoustic techniques since they have been greatly developed in recent years.

Keywords: Non-destructive testing, Semi-destructive testing, Timber structures, In-situ evaluation

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Use of Inorganic-bonded lignocellulosic panels in construction industry

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Abstract

Use of inorganic-bonded lignocellulosic panels produced from wood or other lignocellulosics, and inorganic materials such as cement, magnesium gypsum have been increased **have been** continuously **increased** within the last 20 years because of the advantageous characteristics for out door applications in construction industry. In this study, the information will be given about inorganic bonded lignocellulosic panels such as gypsum/wood panels, cement/wood panels, wood wool / inorganic panels, magnesium / wood panels, portland cement /wood panels raw material characteristics), and raw materials (wood and other lignocellulosics, and inorganic materials used in the production. Furthermore, significant advantages and easy-use, raw material requirements, production process, problems and solutions in production and service.

Keywords: Inorganic-bonded lignocellulosic panels, construction industry, inorganic materials, wood

Use of Screening Machine Wastes for Manufacturing of Particleboard Composite

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Abstract

In this study, fast grown *Ailanthus Altissima* (Mill.) Swingle wood and screening machine wastes occurred during the particleboard manufacturing were used for particleboard manufacturing. The purpose of this study was to determine the effects of screening machine wastes (dust and rude particles) usage on the mechanical (modulus of rupture, modulus of elasticity and internal bond strength), physical (thickness swelling) and surface quality (roughness) properties, and formaldehyde emission of particleboard composite. 10% dust usage positively affected the surface roughness, thickness swelling, and mechanical properties of particleboard panels. 20 % dust usage did not statistically affect the mechanical strength properties, surface roughness and formaldehyde emission. Thickness swelling of the panels was improved by using 20% dust. Increasing dust usage to 30% caused poorer the mechanical strength properties and surface smoothness. 10% rude particle usage did not statistically affect the quality properties of particleboard. Increasing rude particle usage from 10% to 20 % and 30% negatively affected the mechanical strength properties and thickness swelling of the test panels. The results showed that fast grown *Ailanthus Altissima* (Mill.) Swingle wood can be used particleboard manufacturing. Dust (in surface and core layers) and rude particles (in core layer) usage should not exceed 20% and 10 %, respectively.

Keywords: *Ailanthus Altissima* (Mill.) Swingle, Dust, Particleboard, Quality properties, Rude particles, Screening machine wastes

Local Volume Equations For Black Pine In Southern Turkey

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Abstract

Accurate estimates of tree volume are necessary and important for the efficient management of forest resources. The ability to predict the growth and yield of forest stands growing in various site conditions is critical in the development of ecologically based management plans and strategies. Black pine (*Pinus nigra* Arnold.) is one of the most important tree species in Turkey. Therefore, the information is necessary about growth and yield of the species for developing future management and planning strategies. The one of the essential building blocks in forest growth and yield prediction models is the equations for estimating individual tree volume. Volume estimation is an important issue to estimating upper stem diameter and volume to different merchantable height, to forest management and planning, to projecting regarding future of forest products industry, to monitoring the forest health and productivity and to estimating biomass and carbon stocks. Therefore, there is a need for volume estimation methods to accurately estimate tree volumes and combination with growth and yield models. Local volume equations provide accurate volume predictions and assisting in sustainable forest management. In the present study local volume models for Black pine (*Pinus nigra* Arnold.) in the southern Turkey were developed with data from 630 destructively sampled trees. About 50% of data was used for model validation process. The tested models were compared using four performance criteria (Fit index, average absolute residuals, and Akaike Information criteria) for model development and validation dataset. Accordingly relative ranks of models, the best volume equations are Takata (1958) and Schumacher-Hall (1933) for Black pine. As a result, tree volume can be estimated with high precision using Schumacher-Hall (1933)'s equation for natural black pine stands in region. Using local-specific volume equations allows making more robust estimations and, therefore, will enhance the accuracy of volume predictions..

Keywords: Black pine, local volume equation, ecoregion, *F-test*



Ahşabın Çalgı Aletleri Yapımı Bakımından Önemli Akustik Özellikleri ve Bunların İyileştirilmesi İmkanları

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Özet

Ahşap, çalgı aletleri yapımı için üstün akustik özellikleri nedeniyle vazgeçilmez bir malzemedir. Ahşabın akustik üstünlüğü son derece hafif olmasına karşın yüksek bir elastikiyet modülüne sahip olması ve özellikle liflere paralel yönde sesi yüksek hızda iletibilmesinden kaynaklanmaktadır. Buna bağlı olarak ahşap diğer birçok malzemeye göre ses dalga rezistansı düşük olan bir malzemedir. Çalgı aletleri yapımı için seçilen bir ahşap malzemenin her şeyden önce uygun bir ağaç türü olması, bunun yanı sıra yeknesak yapılı, düzgün lifli, homojen ve yavaş büyümüş, dar yıllık halkalı ve kusursuz olması büyük bir önem taşımakta ve bu amaç için ahşap özenle seçilmektedir. Seçilen ahşabın çok iyi bir şekilde kurutulmuş olması da ses kalitesi bakımından son derece önemlidir. Akustik özelliklerin daha da iyileştirilmesi için bu malzemelerin uzun yıllar boyunca bekletilerek terbiye edilmesi geleneksel bir uygulamadır. Böylece ahşapta tekrarlı adsorpsiyon ve desorpsiyonlar sorpsiyon kapasitesinin azaltılması ve denge rutubetinin önemli miktarda aşağıya düşmesi sağlanabilmektedir. Uzun yıllar bekletmenin ahşabın kimyasal yapısında da değişikliklere neden olduğu belirtilmektedir. Ahşabın geleneksel yöntemlerle ses kalitesinin artırılması oldukça uzun zaman alan bir süreçtir. Bu sebeple ahşabın suni yaşlandırma uygulamaları ile kısa sürede ses kalitesinin artırılabilme imkânları çeşitli bilimsel çalışmalara ve patentlere konu olmuştur. Bu alanda yapılan uygulamalar genel olarak termal modifikasyon, kimyasal modifikasyon ve biyolojik modifikasyon başlıkları altında toplanmaktadır. Bu çalışmada ahşabın çalgı aletleri yapımı bakımından önem kazanan anatomik ve akustik özellikleri ele alınmış ve değerlendirilmiştir. Ayrıca ahşabın akustik özelliklerini iyileştirmek için uygulanan modifikasyon yöntemleri de özetlenmeye çalışılmıştır.

Anahtar kelimeler: Akustik özellikler, ahşap, çalgı aletleri, biyolojik modifikasyon, kimyasal modifikasyon, termal modifikasyon, mekanik modifikasyon



Detection and identification of *Xanthomonas campestris* pv. *vitians*, a causal agent of Lettuce Bacterial Leaf Spot Disease, in Southwest Mediterranean region of Turkey

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Abstract

The disease has been first observed on the leaves of lettuce seedlings grown in some of the commercial vegetable seedling production companies and lettuce grown fields located in the province of Antalya in November, 2016. The disease symptoms were commonly observed on the leaf edges of lettuce seedlings and lettuce plants grown in greenhouse and field in Antalya. The infected lettuce seedlings resulted in complete invasion of the pathogenic bacterium within 24-48 hours, and the seedlings finally die. The spreading of disease was very fast under favorable greenhouse conditions in autumn production season, having 85-95% humidity. The pathogenicity tests and Koch's postulates have been successfully completed on the 3-weeks old lettuce seedlings of cultivars, "Cresidential" and "Caipira". The identification of the pathogen was done by classical-PCR (Polymerase Chain Reaction) using primer pairs, B162T7/B162R, specific to *Xanthomonas campestris* pv. *vitians*. The 700-bp PCR amplicon was sequenced and compared with gene bank blast that resulted in approximately 100% homology with *Xanthomonas campestris* pv. *vitians*. The bacterium was also successfully identified directly from bacterial cells and diseased leaf tissues of lettuce by Real-Time PCR using SYBR Green

Keywords: Lettuce, Bacterial Leaf Spot, PCR, Real-Time PCR

Antimutagenicity And Antioxidative Dna Damage Properties Of Aqueous Extracts From Cimin Grape Seeds In Human Lymphocyte Cells

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Abstract

Due to its great content of phenolic compounds, grapes present significant health benefits in humans. Actual findings indicate that grape seed extracts possess a very wide spectrum of pharmacological and therapeutic features against injuries via oxidative stress. At this point, Cimin grape is grown only in Turkey (Üzümlü District, Erzincan Province). It is being used in folk medicine for treating gastrointestinal and cardiovascular diseases and diabetes. Up to date, there is little information were recorded in the literature on the molecular and genetic responses to the aqueous Cimin grape seed extract (ACGSE) in vitro. Therefore, we performed this investigation on cultured human lymphocytes for assessing the mutagenicity/anti-mutagenicity and anti-oxidative DNA damage potentials of ACGSE. Grape samples were obtained from Erzincan Province in 2016 and ACGSE were prepared from the crushed seeds of grape. The cytogenetic changes were monitored using Sister Chromatid Exchange (SCE), Micronucleus (MN), Chromosomal Aberrations (CA) and Single Cell Gel Electrophoresis (SCGE) assays as genetic end-points. Total antioxidant capacity (TAC), total oxidative stress (TOS) and 8-hydroxy-2'-deoxyguanosine (8-OH-dG) levels were determined for evaluating oxidative alterations. In addition cell growth kinetics including cell proliferation index (CPI) and nuclear division index (NDI) were also calculated after treatment with ACGSE, mitomycin C (MMC 10^{-7} M; a well known mutagen) and their combinations. The obtained results by cytogenetic analysis revealed that ACGSE-treatments (0 to 500 mg/L) of human lymphocytes did not cause to any increases of SCE and CA rates or MN and genetic damage score (SCGE) frequencies alone but led to significant ($p < 0.05$) decreases of above genetic parameters in co-treatments with MMC for 72h. In the oxidative analysis, ACGSE-treated lymphocytes at relatively higher concentrations (>25 mg/L) could inhibit oxidative damages. In a conclusion, present findings suggest that ACGSE has protective effect against chemically induced oxidative DNA damage. Hence, it could be added to dietary supplements to help prevent oxidative stress.

Keywords: Cimin grape, Grape seed extract, Antioxidant status, Antimutagenic effect, Human lymphocytes, Dietary supplement

Acknowledgement: The author thanks to Prof. Dr. Hüseyin ÖZER for providing the tested grapes from Erzincan Province.

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Neuroprotective Effects Of Grape Seed Extracts On Monosodium Glutamate Induced Oxidative Stress Mediated Neuronal Damage In Cultured Human Neuroblastoma Sh-Sy5y Cells

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Abstract

Nowadays, monosodium glutamate (MSG) is extensively used as a flavor enhancer in several food industries. However, MSG was shown to cause deleterious effects on various organs including liver, kidneys, hearth and brain. And, it was also well documented that MSG-induced cytotoxicity was occurred likely via the oxidative stress pathway. Antioxidants or antioxidant natured compounds have the potentials for modulating the oxidative stress related functional and pathological processes. At this point, recent data suggested that grape seed extracts (GSEs) possess a very wide spectrum of therapeutic effects against cellular damages due to oxidative stress formation. In this research, the neuroprotective potentials of GSEs on MSG-induced cytotoxicity, oxidative stress and genotoxic damage were evaluated in the human neuroblastoma cell line, SH-SY5Y. Grapes were picked up from Erzincan Province in 2016 and aqueous extracts were prepared from the crushed seeds of grape. 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide (MTT), lactate dehydrogenase (LDH) leakage, Neutral Red (NR) assays and Hoechst 33258 staining were performed to determine the cytotoxicity. Additionally, we measured levels of total antioxidant capacity (TAC) and total oxidative stress status (TOS). The effects of GSEs on DNA damage by MSG were also assessed using the single cell gel electrophoresis (SCGE) assay. Co-treatment with GSEs was found to ameliorate the loss of cell viability and the changes in cell morphology by MSG for 6, 12, 24 and 48h. Again, MSG-induced oxidative stress, represented by the increase of TOS level and the reduction of TAC level, was prevented significantly by treatments with GSEs (0 to 200 mg/L). As a conclusion, in the light of the present findings it was suggested that grape seed extracts might be useful for ameliorating oxidative stress and beneficial dietary supplement for neurodegenerative disorders.

Acknowledgement: The author thanks to Prof. Dr. Hüseyin ÖZER for providing the tested grapes from Erzincan Province.

Keywords: Neuroprotector, Glutamate toxicity, Monosodium glutamate, Grape seed extract, Oxidative alteration, SH-SY5Y cell line

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A Study on Analysis of Variables Affecting Carcass Weight in White turkeys by Regression Analysis Based on Ridge Regression and Factor Analysis Scores

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Abstract

In this study, the effect of carcass parts on carcass weight of White turkeys (Big-6) was analyzed by regression analysis based on Ridge Regression and Factor Analysis Scores. For this purpose, a total of 30 turkey carcasses, 15 male and 15 female at the end of 16 weeks of age, were used. To determine the carcass weight, thigh weights (X1), chest weight (X2), wing weight (X3), back weight (X4), liver weight (X5), gizzard weight (X6), heart weight (X7), foot weight (X8) and foot diameter (X9) were used. In the ridge regression model, since the Variance Inflation Factor (VIF) values of the variables are less than 10, the multi-link problem is gone. Furthermore, $R^2 = 0.999$ was obtained in the ridge regression model. Since the eigenvalues of the two variables predicted by factor analysis scores are greater than 1, the model can be explained by two factors. The variance explained by two factors constitutes 84.469% of the total variance. The regression equation was considered statistically significant ($P < 0.01$). In the regression equation, two factors obtained by using factor analysis scores were independent variables and standardized carcass weight was considered as dependent variable. In the regression model created by factor analysis scores, the Variance Inflation Factor values were 1 and $R^2 = 0.96$. Both regression models were found to be suitable for predicting carcass weight in turkeys. However, the Ridge Regression method, which has a higher R^2 value, has been shown to better explain the carcass weight.

Keywords: White turkeys, carcass weight, carcass parts, Ridge Regression, Factor Analysis Score Based Regression.

The effect of natural and synthetic progestagen applications on some reproductive performance in Akkaraman ewes

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Abstract

The aim of this study was to determine the effect of natural and synthetic progestagen applications on some reproductive performance, lamb birth weight and lamb survival rate in Akkaraman ewes. A total of 40 Akkaraman sheep breed with similar live weights (51.3 ± 1.5 kg) and at least with two parturitions was used as experimental animals. 96 hours prior to estrus synchronization application, intramuscular injection of 1 cc PGF_{2 α} was performed to lutealysed the corpus luteum on the ovary in all ewes. The ewes were allocated randomly into two groups according to body weight. Estrus of ewes in the first group (n=15) were synchronized with intra-vaginal CIDR device containing 0.30 g natural progesterone. Estrus of ewes in the second group (n=25) were synchronized with intra-vaginal sponges containing 30 mg flugestone acetate. CIDR and sponges were withdrawn following 12 days and 600 IU PMSG were injected intramuscularly. After 24 hours from injections, all ewes were introduced to Akkaraman rams and ewes in estrus were recorded. There were no significant differences between natural and synthetic progestagen applications in terms of estrus rate, pregnancy rate and duration of pregnancy in Akkaraman ewes. Additionally, lamb birth weight and lamb survival rates were similar in both experimental groups. However, application of CIDR increased total and multiple lamb birth rates of Akkaraman ewes ($P < 0.05$). These results show that application of CIDR device with PMSG may increase multiple lamb birth rate of Akkaraman ewes. This work was supported by the AhiEvrans University Scientific Research Projects Coordination Unit. Project Number: ZRT.E2.17.002.

Keywords: Akkaraman, Estrus synchronization, Lamb production, Progestagen, PMSG



Banana Wet Rot Disease caused by *Pectobacterium carotovorum* subsp. *carotovorum* in Anamur county of Mersin in Turkey

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Abstract

The disease has been first observed on the stems of banana plants grown in greenhouses of Anamur county by banana producers in 2016. The disease symptoms especially occur on the any upper or lower parts of banana stems and finally resulted the stem to break. The disease spreads very fast under high humidity and temperature conditions of greenhouse. The extensive isolations from stems of banana cultivars; Grand Nine, Şimşek, Bodur Azman, Uzun Azman having wet rot disease from the different banana-growing greenhouses in Anamur county were completed and resulted as a bacterial pathogen. Pathogenicity and Koch's postulates tests have been successfully completed on the 2-years banana seedling cultivar, Grand Nine. The identification of the pathogen was done by Nested-PCR (Polymerase Chain Reaction) using primer pairs, EXPCCR/EXPCCR and INPCCF/INPCCR, specific to *Pectobacterium carotovorum* subsp. *carotovorum*. The 400-bp and 550-bp amplicons of Nested-PCR were sequenced and compared with gene bank blast that resulted as approximately 100% homology with *Pectobacterium carotovorum* subsp. *carotovorum*. The pathogenic bacterium was also successfully identified and detected from both directly pure culture of the bacterium and from the diseased stem tissue of banana by Real-Time PCR using previously developed primer pairs and LNA probe specific to the pathogenic bacterium.

Keywords: Banana wet rot, Nested- PCR, Real-Time PCR



The effect of PMSG or FSH applications on estrus ratio in Akkaramanewe

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Abstract

The aim of this study was to determine the effect of natural progesterone containing CIDR (Controlled internal drug release) device application with PMSG or FSH on estrus ratio in Akkaraman sheep. A total of 24 Akkaraman sheep breed with similar live weights (50.4 ± 0.8 kg) and at least with two parturitions was used as experimental animals. 96 hours prior to estrus synchronization application, intramuscular injection of 1 cc $PGF_{2\alpha}$ was performed to luteolyse the corpus luteum on the ovary in all ewes. The vaginal CIDR device containing 0.30 g natural progesterone was then inserted into all ewes. CIDRs were withdrawn following 12 days and ewes were allocated randomly into two treatment groups. Ewes in the first group (n=12) were injected 600 IU PMSG and ewes in the second group (n=12) were injected twice 6 mg FSH at 12 hour intervals. After 48, 72 and 96 hour from injections, all ewes were introduced to a teaser Akkaraman ram for 3 hours and ewes in estrus were recorded. After 48 and 72 hours from injections, ewes in PMSG group showed higher ($P < 0.05$) estrus rate than those in FSH group (FSH 0% – PMSG 8.3%; $\chi^2 = 8.57$ and FSH 16.7% – PMSG 41.7%; $\chi^2 = 9.52$, respectively). 96 hours after injections, there were no significant difference between ewes in PMSG and FSH groups in terms of estrus rate (FSH 33.3% – PMSG 25.0%). Totally, a reduced number of ewes were in estrus in FSH group (50%) compared to those in PMSG (75%) group ($P < 0.05$; $\chi^2 = 9.52$). These results show that application of PMSG with CIDR device may increase success rate in estrus synchronization.

Keywords: Estrus synchronization, CIDR, progesterone, PMSG, FSH

Consumers - Determination of the Factors Affecting the Consumption and Consumption of Bakery Products (Amasya Province Suluova District)

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Abstract

In Turkey, the most sowing area is divided into wheat. In recent years, the importance of wheat has increased even more as food safety and human health issues have come to the forefront. When a baked product is mentioned, it is understood that the baked goods obtained from cereal flour are ready to be consumed or pretreated and can be consumed with some additional processing afterwards. Although a limited number of studies have been conducted on the consumption of flour and flour products throughout Turkey, a study on the subject has not been found in the province of Amasya, which has been selected as a research area. For this reason, research is original and important. In this research, bread consumption cases of 378 individuals living in the province of Amasya, Suluova, calculated with the help of proportional sampling, were examined in terms of bread types, and the reasons why families prefer bread types they consumed and the points they paid attention to when they bought them were examined. The level of consciousness of the individuals is determined and the socio-economic variables affecting the bread consumption are statistically tested and the necessary suggestions will be made in the light of these results.

Keywords: Consciousness Level, Bread Consumption, Behavior, Attitude

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The Effect of Maternal Parity on Placental Characteristics in Akkaraman Ewes

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Abstract

Placental characteristics are among the factors affecting fetal growth and development that influence lamb vitality. The aim of this study was to investigate the effect of maternal parity on placental and birth characteristics in Akkaraman ewes. The experiment was conducted on 32 Akkaraman ewes ranging from 2 to 5 years of age and classified according to first, second and third parities. Birth weight and placental measurements were recorded within 12 h after parturition. Birth weight, placental weight and cotyledon density of lambs were affected by maternal parity ($P<0.001$). Total cotyledon numbers, cotyledon weights, cotyledon depth, cotyledon width and placental efficiency of lambs were not affected by maternal parity. The length of small cotyledons in two years old ewes was higher than those in other ewes ($P<0.05$). In conclusion, the results suggest that lamb birth weight is significantly affected by maternal parity and placental weight in Akkaraman ewes.

Keywords: Ewes, Akkaraman, maternal parity, placental characteristics, birth weight

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Effects of Genotype and Explant Source on Shoot Induction and Plant Regeneration in Rice (*Oryza sativa* L.)

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Abstract

This research was conducted at the Department of Agronomy of Faculty of Agriculture, University of Ondokuz Mayıs. In this study, Edirne and Mis-2013 rice varieties as plant material, the first node and the first internode as an explant source and different hormone combination as a media were used. Research result indicated that a total of 130 shoots were obtained from the explants cultivated in the medium and it was determined that the rate of shoot induction was 20.3%. The highest number of shoots was obtained from Mis-2013 rice variety with 73 shoots and the rate of shoot induction was found to be 22.8%. The highest number of shoots was obtained in LS medium with 63 shoots and the rate of shoot induction was found to be 39.4%. The highest number of shoots per explant source was obtained from the 1st node with 91 shoots and the shoot induction rate was found to be 28.4%. In addition, plant regeneration results indicated that, a total of 62 of the plants transferred in vivo from in vitro conditions were able to survive. It was determined that the rate of plant regeneration was 9.7%. The maximum number of plants in the varieties was obtained from 39 rice variety of Edirne and it was determined that the plant regeneration rate was 12.2%. The highest number of plants was obtained with 31 plants in the LS+1 mg/l BAP medium and the rate of plant regeneration was found to be 19.4%. The maximum number of plants per explant source was 54 plants and 1st node explant, and the rate of plant regeneration was found to be 16.9%. Finally, it was decided between the varieties of Edirne variety, between the medium of LS medium and the explant sources, that the first node explant was suitable for shoot induction and plant regeneration.

Keywords: Rice, Shoot Induction, Plant Regeneration

Electrochemical Determination of Capsaicin on a Graphene Modified Glassy Carbon Electrode in the Commercial Pepper Samples

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Abstract

Capsaicin (8-methyl-*N*-vanillyl-*trans*-6-nonenamide) is the most abundant pungent molecule present in red peppers and it is widely used for food flavoring, for pepper spray in self-defense devices and more recently in ointments for the relief of neuropathic pain. In spite of the electroactive nature of capsaicin, however, there are few studies recently published on its voltammetric determination [1-4]. In the present paper, an electroanalytical methodology for the determination of capsaicin using adsorptive stripping voltammetry at a graphene-modified glassy carbon electrode (GR/GCE) is presented. The results indicated that the modified electrode exhibited an excellent electrocatalytic activity towards the oxidation of capsaicin, testified by the increased oxidation peak current. Using square-wave stripping mode, the compound yielded a well-defined voltammetric response in Britton-Robinson buffer, pH 6.0 at +0.54 V (vs. Ag/AgCl) (after 60 s accumulation at +0.1 V). A linear calibration graph was obtained in the concentration range of 0.01 to 1.5 $\mu\text{g mL}^{-1}$ (3.27×10^{-8} - 4.91×10^{-6} M). A detection limit of 0.00215 $\mu\text{g mL}^{-1}$ (7.04×10^{-9} M), and relative standard deviation of 2.62% for a concentration level of 1.0 $\mu\text{g mL}^{-1}$ (n= 10) were calculated. As an example, the practical applicability of GR/GCE electrode was tested with the measurement of capsaicin in the commercial pepper samples.

Keywords: Capsaicin; voltammetry; graphene modified glassy carbon electrode; the commercial pepper samples.

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Selective and Simultaneous Determination of Chlorogenic acid, Vanillin and Caffeine by Adsorptive Stripping Voltammetry Using a Cathodically Pretreated Boron-Doped Diamond Electrode in the Food Samples

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Abstract

Chlorogenic acid (CGA), biologically important phenolic compound, is a member of hydroxycinnamic acid group found in apples, pears, peaches, plums, cherries, and among other fruits, and also in beverages such as coffee and tea. Vanillin (VAN) is a unique and highly prized food additive as flavor enhancer. This compound is widely used to contribute to the fragrance of commercial foods such as pudding, ice-cream, custard, cookies, chocolate, and beverages. Caffeine (CAF) is a naturally occurring alkaloid widely distributed in natural products, commonly used as a flavoring agent in a variety of beverages. CAF may be also considered as the most widely used drug in the world. With respect to the above mentioned facts, the individual and/or simultaneous determination of CGA, VAN and CAF is important for the quality (taste and health benefit of the product) in foods. Despite the fact that these molecules are electrooxidizable at several electrodes, however, bare electrode materials have rarely been used for their analysis. The present study describes a convenient method for the selective and simultaneous determination of chlorogenic acid (CGA), vanillin (VAN) and caffeine (CAF) using a cathodically pretreated boron-doped diamond (CPT-BDD) electrode and square-wave adsorptive stripping voltammetry (SWAdSV). Three very well-resolved and reproducible oxidative processes of CGA, VAN and CAF were found at 0.68 V, 1.15 V and 1.50 V vs. Ag/AgCl/NaCl (3.0 mol L⁻¹), respectively, in 0.1 M HNO₃. Under the optimum analytical experimental conditions, the peak currents were linearly dependent on CGA, VAN and CAF concentrations using SWAdSV method in the ranges of 1.0–60, 0.5–50, and 0.1–40 µg mL⁻¹, with detection limits of 0.141, 0.058, and 0.029 µg mL⁻¹, respectively. The investigated method showed good reproducibility and repeatability as well as high recovery in the commercial food samples.

Keywords: Chlorogenic acid; Vanillin; Caffeine; Boron-doped diamond electrode

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Evaluation of Ecotourism Potential of Kabakdağı, Ordu

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Abstract

Development of tourism which is among the most important profit industries effects lifestyles of people through changing their living environments. The increasing importance of nature-friendly tourism among all types of tourism led to appearance of alternative tourism types such as ecotourism. Similar to the other types of tourism, ecotourism is also of great importance with respect to employment in small settlement areas and villages. Moreover, it allows the local culture to meet tourists, and include educational activities for sustainability of natural resources. Ecotourism, which is a type of environmental based tourism preserving the environment as well as observing welfare of the local society, has an important place in the world market. Kabakdağı Köyü (village), which is one of the ecovillage project in recent years, was built for this purpose. Natural and cultural resources which will enable engaging in ecotourism activities are available in Kabakdağı Köyü which was selected as the research area. The efficiency and support of the local people are among the most important inputs of the project. This study aims to categorize the existing natural and cultural potential in the area with respect to the values constituting resources for tourism on regional level. We used the SWOT Analysis technique as method in the study, and we made our best effort to determine opportunities and threats with strong and weak aspects of the region with respect to ecotourism. We evaluated and categorized the existing and potential tourism activities by means of SWOT Analysis, observations and studies performed in the region. We proposed recommendations in the light of data obtained in the study.

Keywords: Ecotourism, natural resources, cultural resources, sustainability, Kabakdağı



Determining Suitable Ecotourism Areas through Visibility Analysis in Protected Forest Area: Maça

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Abstract

The rapid population growth, technological improvement and the expansion the boundary of urban have affected the natural and cultural landscape values of rural areas negatively. This causes to consumption unawares natural and cultural values of landscape. In this study, the protected forest area, located district of Mary Valley, Macka, Trabzon, which is under threat because of uncontrolled tourism and lack of management strategies, is selected as a study area. This study area has one of the important national parks, cultural heritage points, historical trails, river falls, natural forest view, wildlife and endemic plants but the landscape values of Mary Valley have damaged because of lack of administrative structure. This area attracts tourists, which cause negative effects on natural and cultural environment. This study aims to explore the natural and cultural landscape values of protected forest area and highlight the importance of cultural, historical and natural view points in the Mary Valley. To achieve this goal, firstly, the natural and historical landscape data are collected and then multi-criteria decision making methods, is employed on the basis of the data derived from the surveys and interviews with local and experts. Then all data (natural-cultural values and interview) overlay in GIS through visibility analysis process. The "very high-high and medium visibility areas" are offered as suitable ecotourism areas for ecotourism activities, which has no negative effects to natural and cultural areas. The methods and findings can set guidance for sustainable development to preserve their national and cultural values by improving their management, financial and touristic affairs for protected forest area in Turkey.

Keywords: Environmental protection, protected forest area, multi-criteria decision making, ecotourism, GIS.



New Approach to Plant Protection

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Abstract

Plant protection against diseases, insects and weeds are necessary to ensure good quantity and quality of crop. The purpose of plant protection by various chemicals is to destroy harmful organisms and to prevent infection, but at the same time plant protection product residues remain in food and environment. Pollution of the soil, groundwater, air, plants and animals are vital problems for modern agriculture. The application of chemical substances in amounts as small as possible will need to be ensured; however, it must also be ensured that plant protection quality will be maintained. The basic tendency in the field of plant protection concerns with reducing the use of pesticides and developing alternative application against pests and weeds. In recent decades, alternative plant protection applications has been developed such as using nanomaterials, RNA silencing technologies and plant protection product application based on measurement sensing systems.

Keywords: RNA silencing, Sensing systems, Nanomaterials



Comprehensive Review of Organic Foods Throughout The World

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Abstract

Organic foods are produced without the use of conventional pesticides, synthetic fertilizers or sewage sludge and are processed without the application of ionizing radiation. The belief that organic foods are 'healthier' than conventionally-produced foods appears to be based on the perception that organic foods have superior sensory attributes, contain lower levels of pesticides and synthetic fertilizers and have higher levels of nutrients and protective phytochemicals.

Organic production, which is regulated and supported according to EU standards, is controlled, certified and labelled. Organic products tend to retail at a higher price than their conventionally grown/produced counterparts, mainly because of their lower yield and certification costs.

The data on organic agriculture available from 172 countries show that the global market for organic food in 2014 reached 80 billion US Dollars, with Switzerland having the highest per capita spending (221 Euros). According to the IFOAM report, Turkey ranks fourth among 81 countries in terms of increasing organic farmland.

Keywords: Organic, organic product, organic production, the world

Determination of Chemical Composition, Metabolisable Energy, Organic Matter Digestibility and *In Vitro* Gas Production of Some Forages and Concentrates InIgdır

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Abstract

In the current study, the chemical composition, gas production parameters, metabolisable energy, organic matter digestibility were determined using *in vitro* gas production technique. It has been seen that there is negative relationship between digestibility and acid detergent fiber (ADF) or neutral detergent fiber (NDF). The digestibility of wheat straw was lower since it is very rich in ADF and NDF. Although ash content of dry hay (9.22%) was the highest one, the lowest one is maize grain (1.37%). It has been found that there is a negative relationship between total gas productions. The feedstuffs with high as content produced less gas than the others. Crude protein contents of feedstuffs ranged from 2.48% to 28.52%. There are significant ($P<0.001$) differences among feedstuffs. The gas production decreases with increased CP contents since carbohydrate contents decreases at the expense of protein. Although the highest gas production was obtained for maize grain, the lowest gas production was obtained for sunflower seed meal. It has been found that there are significant differences ($p<0.001$) among feedstuffs in terms of organic matter digestibility, metabolisable energy.

Keywords: Ruminant animals, forage, feed, nutritional, metabolic energy values of the degree, organic matter digestion

Evaluation of larvicidal potency of *Bacillus thuringiensis* Vip3Aa16 toxin against *Ephestia kuehniella* (Lepidoptera: Pyralidae) larvae and influence of abiotic factors on its insecticidal activity

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Abstract

The Mediterranean flour moth *Ephestia kuehniella* (Lepidoptera: Pyralidae) is a widespread pest in flourmills. Larvae of this pest feed on stored grains, nuts, dried fruits and several stored food products. BUPM95 is a *Bacillus thuringiensis* subsp. *kurstaki* strain known by its ability to produce a toxin during its vegetative stage of growth (Abdelkefi-Mesrati *et al.*, 2005). This protein named Vip3Aa16 was characterized by an acute insecticidal activity against different lepidopteran pests. The LC₅₀ of Vip3Aa16 protoxin against first instar larvae of *E. kuehniella* was 31.36 ng/cm² five days post-treatment at 28°C. The study of the interaction of *E. kuehniella* brush border membrane vesicles (BBMV) with biotinylated Vip3Aa16 showed that this toxin bound to a putative receptor of 65 kDa producing extensive damage in the midgut of treated larvae (Abdelkefi-Mesrati *et al.*, 2011). In fact, the midgut histopathology of Vip3Aa16 fed larvae showed vacuolization of the cytoplasm, brush border membrane destruction, vesicle formation in the apical region and cellular disintegration. Interestingly, this *B. thuringiensis* protoxin could relatively withstand environmental stresses such as extreme pH, temperature and UV radiations (Abdelkefi-Mesrati *et al.*, 2016). Vip3Aa16 larvicidal efficiency was also resistant to protease action. These properties could be exploited for novel *B. thuringiensis* insecticide formulation that can be used in biological control programs of undesirable lepidopteran pests.

Keywords: *Bacillus thuringiensis*, Vip3Aa16, Flour moth, BBMV, Abiotic factors.



Biological Activities of Lignin Hydrolysate of Wheat Straw

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Abstract

Lignin degradation products can be used to produce phenolic compounds for food, cosmetic and pharmaceutical industries. Phenolic compounds, due to their positive effect on human health, have become popular products in recent years. The aim of this study is to deal with the solubilization of phenolic materials from wheat straw at different temperatures and alkaline concentrations and their performance as antioxidants and antimicrobials. For this purpose wheat straw was treated with acid and alkaline to produce phenolic acid. To remove hemicellulose, wheat straw was treated with dilute acid. The solid residue obtained after dilute acid pretreatment of wheat straw (SPWS) was treated by alkaline to solubilize the lignin to phenolic acids. With acid hydrolysis, hemicellulose was hydrolyzed to sugars and with alkaline hydrolysis, lignin was solubilized as phenolic compounds. Alkaline treatment was carried out to determine the effect of alkaline concentration and temperature on the production of phenolic compounds to produce the high amount of phenolic compounds. Different alkaline concentrations at 120°C and different temperatures with 2 M NaOH were evaluated for the degree of solubilization of the phenolic materials. It was found that coumaric and ferulic acids were the major phenolic acids in all of the conditions tested followed by syringic acid, vanillic acid, vanillin, 3,4-dihydroxybenzaldehyde, p-hydroxybenzoic acid and gallic acid. The antioxidant and antimicrobial activities of the soluble phenolic materials were determined, all the hydrolysate showed high antioxidant and antimicrobial capacity. The results showed that wheat straw can be used for the production of phenolic compounds with high antioxidant activity that have economic and industrial importance.

Keywords: Lignin, phenolic, antioxidant, antimicrobial

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The Use Areas of Tomato Paste Wastes in Food Industry

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Abstract

Tomato (*Lycopersicon esculentum L*) is the world's second largest vegetable crop. Around the world, nearly 37 million tons of tomatoes are used in the industry in a year. Most of the world's tomato crop is processed into tomatopaste, which is used as an ingredient in many products, such as sauces, ketchup and soups. Tomato industry generates large amounts of by-products, and these by-products representing 10-30% of total processed tomatoes contain tomato seeds, peels, pulp and cores. Seeds and peels present in tomato pomace consist of the substances that are rich in nutritional value. It is underlined in some studies that they are rich in biologically active compounds, such as dietary fiber, protein, oil, mineral matters, phenolic compounds and carotenoids. Thus, it is thought in some studies to determine the potential of paste waste materials in nutrition of human. Tomato pomace, tomato peels or tomato seeds were used to improve the nutritional and functional properties of some foods such as bread, cracker, biscuit, tarhana, fermented sausage, tomato paste and ketchup in recent years. The results of these studies showed that the addition of these waste materials had significant effects on nutritional, functional and technological properties of food products, and the aim of this review is to give the results of these studies.

Keywords: Tomato pomace, tomato seed, tomato peel, functional food, nutrition

Electrochemical Studies on *Lawsonie* and Its Determination in the Commercial Henna Samples using an in-situ Surfactant Modified Boron-doped Diamond Electrode

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Abstract

Lawsonie is the 2-hydroxy-1,4-naphthoquinone pigment found in leaves of *Lawsonia inermis* (henna) and belongs to the family of Lythraceae, a dwarf shrub native to Africa, southern Asia, and Northern Australia. Henna leaves contain high proportion of coloured *Lawsonie* (1.0–1.4%) that have been used as natural colorants for skin and hair dyeing from many centuries [1]. When henna is applied in a form of paste onto hair or skin, it imparts a reddish brown coloration lasting for up to twelve weeks [2]. It is also used in many cosmetics and it is most popular as “henna tattoo.” The electrochemical behaviour of *Lawsonie* at cationic surfactant (Cetyl-trimethyl-ammonium- bromide) modified boron-doped diamond electrode (CTAB/BDDE) was investigated by using cyclic (CV) and square wave voltammetric (SWV) techniques in phosphate buffer pH 2.5. The current signal due to the oxidation process was a function of the amount of *Lawsonie*, pH of the medium, surfactants and scan rate. The phosphate buffer of pH 2.5 was selected as a suitable analytical medium in which *Lawsonie* exhibited sensitive diffusion controlled redox peaks (vs. Ag/AgCl). Moreover the effect of surface active agents on the voltammetric behavior of *Lawsonie* was also studied. Two surfactants were used, an anionic type, sodium dodecyl sulfate (SDS), a cationic type, cetyl trimethyl ammonium bromide (CTAB). Addition of CTAB was found to enhance the current signal whereas SDS showed no effects. The peak current varied linearly with *Lawsonie* concentration in the range between 0.10 and 5 μM with a detection limit of 0.09 μM . The applicability of the proposed method was illustrated by the determination of *Lawsonie* present in green and black henna samples.

Keywords: Lawsonie; surfactant; Boron-doped diamond electrode; Commercial henna samples

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Identificaton of Cucumber Mosaic Virus Subgroup IA from Pepper and Ground Cherry (*Physalis* spp.) Plants Using RT-PCR In Pepper Growing Areas In Şanlıurfa Province, Turkey

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Abstract

Şanlıurfa province has an important position when compared to other provinces in terms of pepper production and consumption in Turkey. However, plant diseases, insects and some weeds restrict pepper production. Investigation of natural population dynamics and alternative hosts of pathogens have greatly contributed to understanding of the epidemiology and development of management possibilities against plant diseases. The present study aims to determine cucumber mosaic virus (CMV) and its subgroups in pepper and ground cherry (*Physalis* spp.) plants in pepper-grown fields in Şanlıurfa province. Young leaves of pepper and ground cherry plants showing mosaic, chlorosis, stunted growth and deformation symptoms in fruit and foliage were collected from the fields. In order to detect presence of virus, samples were initially tested with Double Antibody Sandwich Enzyme Linked Immunosorbent Assay (DAS-ELISA) and samples with CMV-positive were recorded for both plant species from same fields. Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) and Restriction Fragment Length Polymorphism (RFLP) tests were then applied to identify strains of CMV virus in the positive samples. In RT-PCR, fragments located on RNA1 and RNA2 gene regions were amplified and subjected to RFLP test with MluI restriction endonuclease enzyme. In the RFLP process, none of the isolates were cut. CMV is transmitted from infected plants to healthy ones by aphids (Hemiptera:aphididae) and also when it is characterized, there are three subgroups which named as IA, IB and II. According to results of the molecular analyses, it was determined that pepper and ground cherry plants were infected with CMV subgroup I-A. It was determined that pepper plants infected with CMV intensively in fields where ground cherries infected with CMV intensively. With this study, epidemiology of CMV and role of transmission of the virus to pepper plants have been linked with ground cherry plants inhabited in or border of fields have been demonstrated.

Keywords:CMV transmission, pepper, ground cherry, epidemiology, virus



Alleviation of Salt-Induced Stress in *Allium cepa* L. by Exogenous Sodium Hypochlorite (NaClO) Treatment

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Abstract

In this work, the effects of sodium hypochlorite (NaClO) on the seed germination, seedling growth (radicle length, radicle number and fresh weight), mitotic activity and chromosomal aberrations of *Allium cepa* L. germinated under both normal conditions and salt stress were studied. The radicle length, radicle number and fresh weight of the seeds germinated in the medium with NaClO alone reduced as compared with ones of the control seeds germinated in distilled water medium while their germination percentage was statistically the same as ones of the control seeds. In addition, the mitotic index in root tip meristems of *A. cepa* seeds germinated in the medium with NaClO alone demonstrated a decrease according to ones of the control seeds germinated in distilled water medium while their frequency of chromosomal aberrations showed an increase according to ones of the control. On the other hand, salt stress considerably inhibited the seed germination and seedling growth of *A. cepa*. Furthermore, it markedly reduced the mitotic index in root tip meristems of the seeds and increased the number of chromosomal aberrations. Whereas, the detrimental effects of salt on the seed germination, seedling growth, mitotic activity and chromosomal aberrations were dramatically alleviated in varying degrees by NaClO application.

Keywords: Chromosomal abnormality, Germination, Mitotic index, Salinity, Seedling growth, Sodium hypochlorite

Karyological studies of *Origanum* (Lamiaceae) section *Prolaticorolla* from Turkey

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Abstract

The number and size of the chromosomes in the *Origanum* L. genus which belong to section *Prolaticorolla* Letsw. were studied using the Image Analysis System. It is a member of *Origanum laevigatum* Boiss. with the chromosome number of $2n=30$. The sample has been named as 4497 naturally grow in province of Osmaniye was studied. For cytological investigations, root tips were obtained from seeds germinated in petri dishes. They were pretreated with α -monobromonaphthalene at 48°C for 14 h, fixed in ethanol: acetic acid (3:1), hydrolysed with 1N HCl at 60°C for 16 min and stained in Feulgen. Squashes were made in 1% lactopropionicorcein. Karyotype analysis of the plant sample was made by Image Analysis System. Average chromosome length of the 4497 plant sample was 0.54 μm and its haploid chromosome length was measured as 16.34 μm while the relative lengths ranged between 2.75 and 11.99.

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Keywords: Image Analysis System, Karyotype, *Origanum*



Application of Next Generation Sequencing Technologies in Plant Protection

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Abstract

The sequencing of genome and informations obtained from it are significant developments that have changed the course of the scientific world. In recent years, besides it have been carried out innovative studies in area of human health, there have been also important studies in plant health with the new generation sequencing technologies. Studies of epidemiology, ecology and taxonomy of plant pathogens are based on the use of genetic markers such as RFLP (restriction fragment length polymorphism), RAPD (random amplified polymorphic DNA), SSR (simple sequence repeats), AFLP (amplified fragment length polymorphism). When compared to the such traditional methods, New generation sequencing technologies perform the analyses of genome, transcriptom, DNA-protein interactions more comprehensive and economical. With these new technologies, researchers have identified previously undiscovered pathogens and were able to discover all their genomes including information that could be used in the manage disease in a very short time. These evidences have important implications when evaluated in the context of quarantine measures and biosecurity. In this study, the advantages and using of the new generation of sequencing technologies especially in the field of plant protection and the recent studies usingthese technologies have been evaluated.

Keywords: Plant protection, next generation sequencing, plant pathogen



Application of Next Generation Sequencing Technologies in Plant Protection

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Abstract

The sequencing of genome and informations obtained from it are significant developments that have changed the course of the scientific world. In recent years, besides it have been carried out innovative studies in area of human health, there have been also important studies in plant health with the new generation sequencing technologies. Studies of epidemiology, ecology and taxonomy of plant pathogens are based on the use of genetic markers such as RFLP (restriction fragment length polymorphism), RAPD (random amplified polymorphic DNA), SSR (simple sequence repeats), AFLP (amplified fragment length polymorphism). When compared to the such traditional methods, New generation sequencing technologies perform the analyses of genome, transcriptom, DNA-protein interactions more comprehensive and economical. With these new technologies, researchers have identified previously undiscovered pathogens and were able to discover all their genomes including information that could be used in the manage disease in a very short time. These evidences have important implications when evaluated in the context of quarantine measures and biosecurity. In this study, the advantages and using of the new generation of sequencing technologies especially in the field of plant protection and the recent studies usingthese technologies have been evaluated.

Keywords: Plant protection, next generation sequencing, plant pathogen



Role of *Ginkgo biloba* L. Leaf Extract in Alleviation of Detrimental Effects of Salt Stress on Physiological and Anatomical Parameters of Barley (*Hordeum vulgare* L.)

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Abstract

In this work, the effects of *Ginkgo biloba* L. leaf extract (GbLE) pretreatment on the seed germination, seedling growth (coleoptile percentage, radicle length, coleoptile length, radicle number and fresh weight) and leaf anatomy of barley under both normal and saline conditions were studied. GbLE application partly increased the germination percentage and coleoptile percentage of barley germinated under normal conditions while it partly reduced the coleoptile length and fresh weight according to the control. Moreover, it statistically showed the same effect as the control on the radicle length and radicle number. In parallel with concentration rise, salt stress inhibited the seed germination and seedling growth of barley. The inhibitive effects of salt on the germination percentage and coleoptile percentage were dramatically alleviated in varying degrees by GbLE pretreatment. However, it became ineffective in alleviating of salt inhibition on the radicle length, coleoptile length, radicle number and fresh weight of barley seedlings. On the other hand, salinity of the medium caused changes in the leaf anatomy of barley seedlings. GbLE affected in different degrees the various parameters of leaf anatomy of barley seedlings grown in both normal and saline conditions, and this difference was statistically important.

Keywords: Barley, Germination, *Ginkgo biloba* L., Leaf anatomy, Salinity, Seedling growth



Physiological and Anatomical Effects of Ascorbic acid in Barley (*Hordeum vulgare* L.) Exposed to NaCl Stress

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Abstract

In this work, the effects of ascorbic acid (AA) pretreatment on the seed germination, seedling growth (coleoptile percentage, radicle length, coleoptile length, radicle number and fresh weight) and leaf anatomy of barley under both normal and saline conditions were studied. AA application partly increased the germination percentage, coleoptile percentage and radicle length of barley germinated under normal conditions while it partly reduced the coleoptile length, radicle number and fresh weight according to the control. In parallel with concentration rise, salt considerably inhibited the seed germination and seedling growth of barley. Whereas, the inhibitive effects of salt on the seed germination and seedling growth were dramatically alleviated in varying degrees by AA pretreatment. Moreover, salinity of the medium caused changes in the leaf anatomy of barley seedlings. AA affected in different degrees the various parameters of leaf anatomy of barley seedlings grown in both normal and saline conditions, and this difference was statistically important.

Keywords: Ascorbic acid, Barley, Germination, Leaf anatomy, Salinity, Seedling growth

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Comparison of Some Chemical Properties of Amik, Gavur and Golbasi Lakes Soil's

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Abstract

In this study, were carried out the chemical and total elemental analyses of the wetlands, Amik, Gavur and Golbasi Lakes. Amik Lake has a higher level of degradation and mineralization than the other two lakes. Therefore, the high pH and salt value of the plain soil caused the proportions of calcium carbonate and active crime in the soil to increase, the organic matter level and the altitude to be low. The salinity of the soil is less in the Golbasi Lakes,, It is related to geological location and land use as it is related to less degradation of area land. Gavur Lake caused more soil organic matter content to remain under water due to inadequate drainage conditions. The presence of limestone and serpentine as a dominant cation of convertible calcium and magnesium in the Eastern Mediterranean Region, the material transported by the surface waters of the rains falling to the region was considered as the main factor in increasing the concentrations of calcium and magnesium in the lake areas. Golbasi Lake has lower sodium adsorption rate values than the soil of Gavur and Amik Lake soil, it can be said that the degradation of the soil is less and it is the result of the effect of the parent material in the region. In the results of the chemical analysis of three wetlands, Al₂O₃ and SiO₂ were hight found to be insoluble and resistant oxides, elements such as CaO, MgO and Na₂O are soluble and mobile elements, it was obtained as a result of this study that the soil is at high levels.

Keywords: Eastern Mediterranean, wetland, soil, chemical property



Organizational Structure in Turkish Agriculture and The Effects of Cooperatives

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Abstract

Cooperatization is the product of the demand to act planned and organized by benefiting from the power that is the result of acting as one. Thus, the strength of agricultural organizations is possible when the producers have the necessary knowledge about the benefits of this activity. European Union (EU) countries are at the forefront of countries where agricultural organizations are most developed. In EU, agricultural cooperatives have an important place in the development of policies for agriculture, and nearly 50% of agro-based industry is directed by these cooperatives. Even though there are many organizations that practice in agriculture such as cooperatives, chambers of agriculture, unions, foundations and associations in Turkey, these organizations don't have a strong structure where farmers can follow innovations, be in cooperation and protect their rights. Even though there are 13437 agricultural cooperatives that have more than 3.5 million farmers as partners, agricultural cooperatives are still not at a desired level.

Keywords: cooperatives, agriculture, rural organization, Turkey



Taper models for mixed pine species of the Western Blacksea Region, Turkey

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Abstract

Taper models are one of the best ways to estimate merchantable volume and total stem volumes of the tree. This study aimed to assess the performance of taper equations belonging to three different categories for predicting stem diameter and volume for natural mixed stands of Black pine and Scots pine in the Western Blacksea Region, Turkey. An autoregressive error structure was used in model fitting to account for autocorrelation. Selection of the best model was based on both numerical (goodness-of-fit statistics) and graphical analysis (graphics of residuals). The compatible segmented model of Clark et al. (1991) was superior to the other equations in describing the stem profile, estimating height to a specific diameter, merchantable volume, and total volume for both tree species when an upper stem diameter measurement was available for both pine species. If an upper stem diameter measurement was not available, the model of Fang et al. (2000) was selected for both tree species. An F-test indicated that the stem taper differs among the two pine species in mixture and therefore, a different taper equation should be used for each pine species. Using tree specific taper equations allows making more robust estimations.

Keywords: Taper model, Segmented model, Volume systems, Mixed stands, *F*-test



The Importance and Role of Bulgur in Healty Diet

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Abstract

Bulgur is a new but an ancient food product, which enters to modern markets with increasing its production and consumption overall the world. Generally in the producing of bulgur, Triticum durum is used that is processed using cleaning, cooking, drying, dehulling, grinding and classification operations. It can be said that bulgur is the most popular processed grain in Turkey, Arabic and East European countries. In Turkey, 1 million ton bulgur is processed and its consumption is about 15 kg per person annually. Bulgur is a very important food product due to its storability, high nutritional value, ease preparation and low cost, which classified in semi and ready to eat food product groups. It is a magnificent ingredient in salad, pilav, soups, baked goods, stuffings, and casseroles, and as a meatsubstitute in vegetarian dishes. It is widely accepted as a healthy food product owing to its nutrients such as vitamins B, dietary fibre, minerals, unsaturated fatty acids and folate. Moreover, high amounts of cellulose fibre and minerals such as phosphorus, zinc, magnesium and selenium in bulgur have been related to the protection against constipation and colon cancer. The biological value of protein in bulgur is higher than the biological value of wheat's protein, total fat content of bulgur is lower that the total fat content of wheat. The most important phytochemical constituent of bulgur is phenolic compounds. Also, the resistance starch is found in bulgur, which is known as a functional component exhibited the properties of prebiotic. Bulgur regulates the blood sugar with its lower glycemic index. In bulgur, thiamine and folic acid are important constituents for the regulation of nervous and digestive system studies and for the healty of pregnant woman and children, respectively.

The aim of this study is to increase the awareness of the nutritional characteristics and health effects exhibited of bulgur.

Keywords:bulgur, health effect.

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Influence of encapsulated green tea extract and beta-carotene as an additive and edible coating on hamburger patties during refrigerated storage

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Abstract

Hamburger is a popular meat product with a high level of consumption worldwide. Many studies have been conducted so far regarding the addition of antioxidant materials into patties to extend their quality characteristics and shelf life. However, investigations on incorporation of encapsulated antioxidant materials into meat products are limited and these topics are found to be quite interesting in recent years. In this study, green tea extract (GTE) and beta-carotene (BC) were encapsulated in matrix structure of chitosan-tripolyphosphate (CS-TPP) which formed spontaneously and the prepared solutions were utilized in hamburger patties as an additive and edible coating. Coated patties and uncoated patties including these solutions were analyzed for moisture, pH, lipid oxidation, colour and microbiological growth during 8 days of storage at 4°C. According to the results, moisture contents of the patties incorporated with both GTE and beta-carotene had significant differences ($p < 0.05$). The pH values of all the treatments ascended throughout storage probably due to formation of microbial metabolites ($p < 0.05$). GTE was effective in suppressing lipid oxidation regardless of the method used, because TBARS values of all the treatments including GTE were lower than the value of control on the 4th and the 8th days of storage ($p < 0.05$). Microbial growth in the patty containing 5% of solution CS-TPP+GTE as an additive and the treatments coated with the solutions of CS+GTE and CS/TPP+ GTE was the lowest for total mesophilic aerobic counts ($p < 0.05$). In the patties incorporated with BC, the results received on the last day storage exhibited that coating of the treatments with the solutions was more effective than adding BC into the patties using different methods in terms of both lipid oxidation and microbial growth. On the 8th day of storage, it was also noteworthy that there were discolourations in a^* values of the patties and the coated treatments had lower b^* values than that of control ($p < 0.05$).

Keywords: Green tea extract, beta-carotene, encapsulation, edible coating, meat quality, hamburger

Optimization of Extraction Conditions of Bioactive Compounds from Cherry Stalk

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Abstract

The cherry stalk (*Cerasus avium L.*); is from the *Rosaceae* family, a waste of cherry fruit. It has a diuretic activity and it has been used against some disease as a herbal solution. After having been dried and boiled cherry stalk has been used as a folk medicine to treat hypertension and renal colic for analgesia and lower cholesterol. The aim of this study is to deal with the extraction of bioactive materials from cherry stalk at different temperatures, ethanol concentrations and time and their performance as antioxidants and antimicrobials. The effectiveness of extraction conditions were evaluated in terms of the production of total phenolic and flavonoid compounds as well as their antioxidant and antimicrobial activity. The optimal temperature, ethanol concentration and extraction time were also determined to maximize total phenolic and flavonoid content. The results showed that cherry stalk can be used for the production of phenolic and flavonoid compounds with high antioxidant and antimicrobial activity that have economic and industrial importance.

Keywords; Cherry Stalk, Phenolic compound, Flavonoid, Antimicrobial

Importance Of Mating Stage For Sustainability Of Mass Rearing In Bumblebees, *Bombus Terrestris*

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Abstract

The mass rearing of bumblebees, which is indispensable for especially greenhouse tomato pollination, includes some stages such as colony initiation, queen and male rearing, mating, and breaking of diapause. These stages should be realized in controlled laboratory conditions. Currently, more than 200 bumblebee species have been identified but the main species reared as a pollination agent is *Bombus terrestris*. Mating is one of the most critical stages for sustainability of year round rearing. In contrast to honeybees, *B. terrestris* queens and males can be mated in flight cages. While the males do not die after copulation and can remate, queens mate with only one male. Mating usually lasts 20 - 40 minutes. Many factors such as age and body size, volatile pheromones secreted from the labial glands, male/queen ratio in mating cage, environmental conditions such as light intensity, temperature, photoperiod and nest material have effects on mating success. Like honeybees, the sex of bumblebees is determined by haplodiploidy in *B. terrestris*. Fertilized eggs laid by mated queens develop into adult diploid males if they are homozygous at a single sex locus. The production of diploid males increases dramatically with inbreeding. For this reason, rearing the young queens in sufficient numbers and mating them with unrelated males is also crucial for obtain quality colonies in successive generation. In this study, definition of basic necessities for mating stage in mass rearing of *B. terrestris* was aimed.

Keywords: Bumblebee, *Bombus terrestris*, Mass rearing, Mating stage

Reproductive Properties Of *Bombus Terrestris* Colonies Founded By Queens Which Fed Before Diapause

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This study was produced from Master Thesis and supported by Scientific Research Projects Unit of Süleyman Demirel University; Project no: 4412-YL1-15).

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Abstract

Quality of queen is one of the important factors affected the rearing success in mass rearing process of *Bombus terrestris* which extensively used for greenhouse vegetable production. Maternal colony which they reared, emerging weight and pre-diapause feeding of queens can be effective factors in their colony development. Reproductive properties of *B. terrestris* colonies founded by queens which fed before diapause were determined in the present experiment. Mated queens were divided to three experimental groups: (i) queens were not fed before diapause, (ii) queens were fed during the 3 days before diapause and (iii) queens were fed during the 7 days before diapause. Queens in second and third groups were put into individual feeding boxes and were fed ad-libitum with sugar syrup. All mated queens that were individually placed in plastic tubes (Ø40 × 60 mm) and put into artificial hibernation at 2.5 °C for 2 months. After diapause duration, a total of 90 diapaused queens (30 queens for each experimental group) were placed in starting boxes and allowed to found colonies in a climate-controlled room. Colonies were tracked by periodical observations and traits which related with reproductive strategies of colonies were determined. The proportions of colonies producing both males and queens, producing only males, producing only queens and producing no sexuals were determined as 83.3%, 12.5%, 0% and 4.2% in first group, 85.7%, 0%, 14.3% and 0% in second group, and 65.2%, 4.4%, 13% and 17.4% in third group. Results also showed that feeding of queens before diapause affected the total number of males produced in colonies, but did not affect the decision time of male and gyne production (switch point).

Keywords: *Bombus terrestris*, Queen feeding, Reproductive strategies

Effects Of Covering And Pre-Harvest Treatments (Parka And GA₃) On Cracking And Quality Characteristics Of Jujube Fruits (*Ziziphusjujuba*)

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† This study was supported by the Ordu University Scientific Project Unit (Project number: TF-1632) and Ahmet KARAN the owner of YeşilVadi Farm.

Abstract

This study was carried out to determine the effects of pitched cover and pre-harvest treatments [Parka and gibberellic acid (GA₃)] on cumulative cracking, cracking index, weight, width and length of fruit and stone, color characteristics (L*, chroma and hue angle), respiration rate, firmness, soluble solids content (SSC), titratable acidity and vitamin C of Jujube fruits (*Ziziphusjujuba*) at anticipated harvest. When compared with the control treatment, Parka and GA₃ treatments significantly have reduced the fruit cracking. The combination of Parka and GA₃ was the most effective treatment on cracking. The pitched cover led a decrease in the rate of cracking. While parka treatment did not have significant effect on fruit size, the biggest fruit was recorded in GA₃ treatment. However, regarding stone size there were no significant differences between treatments. The pitched cover has reduced both fruit size and stone size. While the differences between the Chroma and Hue angle values among treatments were not significant, GA₃ treatment has reduced the L* values. The pitched cover did not occur to the diversification on fruit colour values (Chroma, Hue angle and L*). It was determined that Parka and GA₃ treatments have decreased the respiration rate of fruit and the respiration rate on covering fruit was lower. While the fruit treated with GA₃ had more firmness, parka treatment had no effect on fruit firmness. Parka and GA₃ treatments have enhanced SSC and vitamin C, but have decreased titratable acidity.

Keywords: Color, cracking index, firmness, respiration rate, vitamin C.

Investigation of Socio-Economic Analysis of Plant Protection Practices of Cotton Producers in Aegean Region*

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Abstract

Today, cotton production has still strategic importance, as well as being one of the products expose to chemical implementations intensively. The Aegean Region is one of the regions intensive polycultural agriculture and the most pesticide-consuming combined with cotton production. The study was carried out in order to determine tendencies of cotton producers to plant protection products applied for diseases, insects and weeds, identify the problems encountered in practice and propose solutions for them. For this purpose, a survey consisting of 52 questions and based on layered sampling method was conducted with 137 farmers from selected 14 districts (42 villages) in İzmir, Aydın, Denizli and Manisa provinces in 2013 years. At the end of the study, it was determined that cotton growers in the Aegean Region used pesticides redundantly to diseases, insects and weeds, and so, both cotton growing costs and sustainable cotton production affected adversely, knowledges of cotton producers based on the past and pesticide applications were based on the other producers. It was also determined that farmers did not take into account economic loss treshold, chose cheaper pesticides, used more pesticide than proposal, did not believe damage of drugs to human health and environment, empty pesticides boxes randomly taken to the environment, they had not get adequate tarining about pesticides and spraying. The data obtained in the study will illuminate the work that will be done later. In connection with this, the transition to good agricultural practices in the Aegean Region will be an important contribution to sustainable agriculture

Keywords: Cotton, Plant protection practices, Aegean region, Production cost

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Approaches of Micro-Scale Furniture and Timber Producing Businesses Towards Their Waste and Environment

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Abstract

This study aims to demonstrate the environmental awareness and practices of micro-scale businesses operating in the furniture and timber industry, which are two sub-sectors of the forest products industry. Small and medium-sized businesses have a significant place in every country's economy for their size, production and employment. While 99.9% of the timber, furniture and paper sub-sectors constituting the forest industry are in the small and medium-sized class, 96% of them are in the micro-scale business class. Although the environmental impacts of each of these businesses are limited, they have an important influence in total. Since the late 1980s, environmental impacts of businesses have been an increasing matter of concern. As a result, there is an increasing pressure on small and medium-sized business owners and managers to improve their environmental management practices and performances. A questionnaire was applied to 120 businesses representing 885 micro-scale timber and furniture producing businesses operating in Trabzon by face to face interview in 2015. The clear majority of these businesses believe there is environmental pollution, but the number of businesses that believe their businesses less pollute the environment. In addition, some of the results of the survey are that 66% of the businesses believe that waste cannot be reduced and there is no organization collecting the waste.

Keywords: Environment, Micro-sized Enterprise, Waste, Furniture, Sawmilling

The Investigation of The Biological Control of *Alternaria alternata* (Fr.) Keissl. (1912)

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Abstract

Alternaria alternata, which has a wide host environment, is an important fungal pathogen causing losses in yield in agricultural fields. The chemicals used to control this disease factor are directly toxic to useful microorganisms living in soil, especially to worms and blue-green algae. For this reason, new strategies are needed to control this factor. With the awareness on the negative effects of the chemicals used in the fight against diseases and with the increasing awareness on environmental issues, alternative methods were sought in the past; and in this context, studies were conducted to find new methods in which fungi and bacteria were used in the biological control against plant pathogens, and successful results were reported. Two isolates were obtained from strawberry and cucumber purchased from greengrocer and were defined as *Alternaria alternata*. These two isolates were passed through pathogenicity processes, and the use of the biological control was investigated in this study. For this purpose, the efficiency of 2 fungal isolates (ET 4, ET 14), which were defined molecularly as *Trichoderma harzianum* Rifai in a previous study and which was used successfully in biological control against many plant pathogen fungal factors, and the 13 bacteria isolates against *A. alternata* was examined in *in vitro* conditions in Potatoes Dextrose Agar (PDA) in this study. In this study, the growth diameters of the disease factor fungus isolates were measured, and it was determined that *Bacillus pumilus* TV 67C (87.63%-65.89%), *Bacillus subtilis* TV 6F (77.61%-63.11%) and *Bacillus megaterium* TV 87A (72.93%-68.87%) bacteria isolates were determined to be the most influential isolates against this disease factor.

Keywords: *Alternaria alternata*, bacteria, biological control, *Trichoderma harzianum*

Determination of The Body Condition Score And Its Relationship With Milk Yield In Turkish Holstein Cows

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Abstract

It is quite important to keep the condition of cows under surveillance due to conduct of nutritional programs in dairy herds as well as genetic relations with other traits. This study was conducted to estimate the heritability of body condition score (BCS) and genetic correlation with milk yield of Holstein cows. Also, the effects of herd, lactation period and calving age on BCS were investigated. For this aim, body conditions of 1001 cows were scored using the scale of 1-9. The average BCS was determined as 5.52 ± 0.04 and its average was ranged from 4.54 to 6.58 at different periods of lactation. Results showed that body conditions were affected by the lactation period significantly ($P < 0.05$), while the effects of herd and calving age on it were not statistically significant. Heritability estimate of BCS was 0.20 ± 0.16 , while the genetic correlation of BCS with milk yield was moderately negative (-0.41 ± 0.17) indicating that high-producing cows tend to be leaner. Although with high standard errors, these results indicates that BCS is heritable at low-moderate level and can result in a progress in both traits by defining an appropriate index.

Keywords: Body conditionscore, Energy balance, Genetic parameter, Milk yield

Covalent Immobilization Of *Pseudomonas Fluorescens* Lipase Via Epoxy Activated Matrix Amberzyme

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Abstract

In this study, covalent immobilization of *Pseudomonas fluorescens* lipase onto epoxy activated matrix Amberzyme was studied. 100 % immobilization yield and 145% activity yield were achieved by optimizing the covalent immobilization conditions such as enzyme/matrix ratio, the pH of immobilization buffer, molarity of immobilization buffer and duration of immobilization. The operational and storage stabilities of immobilized lipase were also tested. The immobilized enzymes retained its activity during 20 consecutive batch reactions and when stored in 5 mL of phosphate buffer (pH 9) at +4 °C in a refrigerator for 20 days. Therefore, it can be concluded that the obtained immobilized lipase can be used in the industrial applications of lipases.

Keywords: Amberzyme, covalent attachment, enzyme immobilization, lipase, *Pseudomonas fluorescens*

The Effects of Lactic Acid Bacteria Isolated from Fish on Biogenic Amine Contents of Fish Waste Silage

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Abstract

The effects of lactic acid bacteria strains on the biogenic amine contents of fish waste silage were investigated for three weeks and after spray-drying process. Lactic acid bacteria (LAB) strains were isolated from muscle, skin and gut of three marine fish and two freshwater fish which are widespread in aquatic ecosystems around Northeastern Mediterranean and Cukurova Plain. After isolation process, they were identified by 16 rRNA gene sequencing and PCR assays. According to the fermentation test results, five lactic acid bacteria were selected for silage preparation. The first group included formic acid as control group and 2nd, 3rd, 4th, 5th and 6th groups were inoculated with *Lactobacillus plantarum*, *Lactobacillus brevis*, *Pediococcus acidilactici*, *Enterococcus gallinarum* and *Streptococcus* spp., respectively. After ripening, all silage groups were spray-dried using Buchi Mini Spray Dryer (B-290, Switzerland). Biogenic amine contents of wet and spray-dried fish waste silages were detected using a rapid HPLC method. This project was supported by Scientific and Technological Research Council of Turkey (TOVAG-2130166). Biogenic amine production in LAB-containing silages varied according to the bacterial count and storage period. 11 biogenic amines were found in wet and dried fish silages produced with formic acid and LAB strains. The main biogenic amines in all group were tyramine, dopamine and agmatine during storage time. Histamine was one of the lowest produced amines (0.00-0.68mg/100g) during storage. After spray-drying, histamin content was also found in range of 0.00-0.04 mg/100g. The highest cadaverine values was determined in *Streptococcus* spp. (1.37mg/100g) in wet silage. In the spray-dried fish waste silages, the highest biogenic amine was putrescine (2.56mg/100g) and tyramine (1.39mg/100g) in *L.plantarum* and *Streptococcus* group, respectively. The study results show that lactic acid bacteria naturally present in fish could be suitable starter culture for production of safe fish silage in regards of biogenic amines.

Keywords: Biogenic amines, fish silage, by-product, fermentation, lactic acid bacteria.

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Licensed Storage Of Cereals and cereal products

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Abstract

The purpose of storing grains is to keep them under optimum conditions without loss of quantitative and qualitative value from storage to consumption. Almost every year in Turkey, a considerable amount of grain remained is transferred to the following year. However, there is a significant loss, app. 10-15% due to storage. Moreover, storage costs are added to the cost of the product. In recent years, licensed storage systems have been intensively promoted as agricultural policy. In this direction, "Regulation on Licensed Storage of Cereals, Legumes and Oil Seeds" has been started to be applied. Many issues should be carried out in compliance with this regulation such as qualities and features of stores, preparation and preservation of products, delivery and maximum storage period. Licensed stores are silos where agricultural products are kept under sanitary and economic conditions, TSE standards, supervision of the ministry, insured and objective settling. In licensed stores, the products are analyzed and quality classes are determined by authorized classifiers, and then accepted by the licensed store operator. These stores are obliged to maintain the quality of the products throughout the storage period. Licensed stores also enable quality-rated products to be processed on electronic platforms as an important convenience. In Turkey, the number of companies licensed on cereal products is 16 and the amount of licensed capacity is 808.340 tons. Many benefits will be provided about prevention of price declines during harvest periods, creation of safe market, trading of standart products, encouraging quality production, registration of trading products and saving in this area, stable and higher income with a system easy to market, well-maintained with the lowest ship cost, easy supply of high-class and price-stable products for producers and trading products through the electronic product notes without need to display samples and development of Turkey's trade in this area.

Keywords: cereal, licensed storage



Physicochemical And Structural Properties Of Pectins From Citrus Peels

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Abstract

Pectin is naturally occurring biopolymer that is widely recognized in food industry as well as in biotechnology. In the present study, the extraction and characterization of pectins from citrus peels were examined. Citrus peels were obtained from lemon (*Citrus limon*), orange (*Citrus sinensis*), mandarin (*Citrus reticulata*) and grapefruit (*Citrus paradisi*) fruits. Peels obtained from fresh fruits were shredded by the chopper and used for pectin extraction after drying in the oven at 60 °C. For the production of pectin, citrus peels were extracted in the citric acid solution (pH 1). Extracts were treated with ethanol to precipitate pectin and precipitated pectin was filtered, washed with ethyl alcohol and dried at 50 °C. Some physicochemical and functional properties of pectins obtained from citrus peels were determined. The isolated pectins were characterized by differential thermal analysis (TG-DTA) to determine thermal properties, fourier transform infrared (FTIR) spectroscopy to determine purity ratings, X-ray diffraction (XRD) analysis to determine the degree of crystallinity and scanning electron microscopy (SEM) to determine structural and morphological properties of pectins. The results are compared with each other and commercial pectin. It was found that all the pectins were high methoxylated pectin, lemon and orange peel pectin had better gel strength and liquid holding capacity than the others. Orange peel pectin had higher thermal stability while lemon peel and grapefruit pectins have more organized structure than the other pectins.

Keywords: Citrus peels, Gel, Pectin, Valorization



Determination of The Olive Oil Economy of Turkey

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Abstract

Olive oil is a natural fruit oil that has antioxidant matters, contains high levels of monounsaturated fatty acid (oleic acid) and high levels of oxidative stability and can only be extracted through physical methods. This study aims to analysis Turkey's current position in terms of olive oil, existing problems and solution offers. In this context, Turkey's olive oil production, consumption and export values for the 2012-2016 years have been acquired from the Turkish Statistical Institute (TÜİK) and International Olive Oil Council (IOC). Turkey's average olive oil production for the 2012-2016 years was 160.800 tons, and with a share of 5.8 % it is the world's sixth leading olive oil producer. According to 2016 data, Turkey's olive oil production is 143.000 tons and 86 % of the consumption (124.000 tons) takes place domestically while only 14 % (20.000 tons) is being exported. The problems facing Turkey in the olive oil industry can be listed as no continuity in production quality, a diminishing trend in terms of production, consumption and export levels over the years, as well as the fact that exporting countries prefer olive oil in bulk.

Keywords: Olive oil, Export, Economy, Turkey

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Soil Microbiological Properties of Maize Grown soils in Harran Plain

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Abstract

In this study, 100 soil samples were taken from Harran Plain, in May 2014, in order to the microbiological and biochemical soil characteristics. In these soil samples, some enzyme activities such as dehydrogenase, β -glucosidase, alkaline phosphatase, catalase, microbiological properties such as CO₂ production, microbial biomass C and some soil physical-chemical analyses were determined.

Keywords: Enzyme activity, Microbiological properties, soil

Investigation On The Herbicidal Effects Of Essential Oil Obtained From Two Mint Species On *Parapholis Incurva*

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Abstract

Allelopathy can be regarded as a component of biological control in which plants are used to reduce development of other plants. Allelopathy refers to the direct or indirect chemical effects of one plant on the germination, growth or development of neighboring plants. Weeds are one of the major problems in world agriculture because they cause losses in crop yield. Researchers have focused on new potential bio-herbicides, having different and selective herbicidal mechanisms in comparison to their synthetic herbicides in recent years. Therefore, seeking to obtain suitable natural compounds as a safe alternative source is essential for weeds management and for bypassing of the bio-environmental problems induced by synthetic herbicides. The genus *Mentha* L. (Lamiaceae) is one of the most important sources of essential oil production. *Mentha piperita* and *Mentha longifolia* essential oils have been tested for their effects on the seed germination and some growth characteristics of *Parapholis incurva* L., which is found in many cultivated lands. Essential oils of mint species at 0, 0.25, 0.5, 1, 2, 4, 8 and 16 µL concentrations were applied to determine their inhibition effects on seed germination; seedling length and seedling root length of *P. incurva* seed under laboratory conditions. The essential oil of mint species caused inhibitory effects on seed germination and seedling length of *P. incurva*. Allelopathicity increased progressively with the increasing essential oil dose. The results showed that total germination inhibition of *P. incurva* depended on the essential oil doses; ranged from 82, 76 to 100%. *Mentha longifolia* showed 100% inhibition at all doses from 0.5 µL doses while *Mentha piperita* showed 100% inhibition at all doses from 1 µL doses. Essential oil of *Mentha longifolia* and *Mentha piperita* could be used as alternatives of herbicides to suppress germination of *C. album* seeds in organic farming systems.

Keywords: Allelopathy, *Mentha longifolia*, *Mentha piperita*, seed germination, *Parapholis incurva*

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Determination of Almond Production Potential in Adıyaman Province

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Abstract

Turkey has a high level of fruit production capacity due to her climate and soil characteristics. In this study, the production and development potential of almond production in Adıyaman province has been defined for a 5-year period (2011-2015) and this potential has been compared with the total production level of Turkey. Criteria such as almond production areas, production level and total number of trees in Turkey and in Adıyaman have been statistically assessed and the almond production potential that has been rapidly increasing for the last 5 years in Adıyaman has been analysed. All data have been acquired from the Turkish Statistical Institute. According to these data, almond production area in Adıyaman, in Central Adıyaman and districts, has increased by 7.11 times, rising from 3.562 decares in 2011 to 25.342 decares in 2015. The production level on the other hand has increased from 598 tons to 1.800 tons, rising by 3.01 times, and the total number of trees increased from 144.918 to 669.057 piece / tree, indicating an increase of 4.62 times. As of 2015, the almond production area in Adıyaman made up 8.54% of the existing almond planted areas, 2.25% of production level and 6.59% of total number of trees. In addition, when we compare Adıyaman with other provinces in terms of the number of planted almond trees, it has been observed to be the leading one among the South-eastern provinces (669057 pcs / tree). These data indicate that in recent years, almond production in Adıyaman has increased noticeably when compared to other South-eastern provinces. In conclusion, when we consider climate change and water consumption levels compared to other fruits, we believe almond cultivation in upper GAP region's Adıyaman province would be product pattern with high added value for farmers.

Keywords: Almond, Adıyaman, Production Potential

Molecular Identification of Sooty Molds on Wheat Fields in Central Anatolia Region and Effect of Seed Germination

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Abstract

Surveys were conducted in wheat cropping areas of Konya, Ankara, Eskişehir, Yozgat, Kayseri, Kırıkkale, Kırşehir, Aksaray, Nevşehir provinces in 2011-2012 growing seasons in Central Anatolia Region, Turkey. Black heads and black spots on leaves were seen especially during late surveys and the contamination rate in these fields was observed between 40-100%. Thirty six wheat samples were collected from these fields. As a result of isolation from heads, leaves and grains, 88 'Sooty Mold' isolates were obtained belonging to 5 different genus. These fungi cause, known as black point, damage (discolored) grain which affect quality and marketability. In consequence of morphologic identification and DNA sequence analysis, isolates obtained from infected black heads and leaves were determined as *Alternaria alternata*, *Alternaria. chlamydosporigena*, *Alternaria infectoria*, *Alternaria quercus*, *Alternaria tenuissima*, *Alternaria triticina*, *Cladosporium cladosporioides*, *Cladosporium herbarum*, *Cochliobolus sativus*, *Epicoccum nigrum* and *Stemphylium sp.* The isolations were made from the grains observed black point, *A. alternate*, *A. infectoria*, *A. tenuissima*, *A. triticina*, *Cochliobolus sativus*, *Cladosporium cladosporioides*, *C. herbarum*, *Epicoccum nigrum* and *Stemphylium sp.*, were determined. The most prevalent species was found as *Alternaria alternata* in the fields. In each wheat cultivar tested in inoculated seeds appreciably reduced their germination.

Keywords: Sooty molds., Black head, Wheat, Molecular, Germination

Potential of Pomegranate Growing in Adıyaman Province

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Abstract

As some provinces of the South-eastern Anatolian Region are an extension of the Mediterranean climate, they encourage hope for pomegranate cultivation too. Considering the climate and soil characteristics of sections of Adıyaman that are closer to Atatürk Dam it is known that the area is suitable for planting pomegranate. In this study, the production and development potential of pomegranate production in Adıyaman province has been defined for a 5-year period (2011-2015) and this potential has been compared with the total production level of Turkey. Data such as production areas, production level and total number of trees in Turkey and in Adıyaman have been used in the study. According to these data, pomegranate production area in Adıyaman, in Central Adıyaman and districts, has increased by 27.54%, rising from 9005 decares in 2011 to 12428 decares in 2015, production amount has increased from 3231 tons to 5112 tons, an increase of 36.79%. As of 2015, the almond production area in Adıyaman made up 4.04% of the existing almond planted areas and 1.14% of production level. Pomegranate cultivation has become an alternative income source for the farmers. When Adıyaman's pomegranate production is compared to South-eastern Anatolian Region, the planted area in Adıyaman (decare) makes up 17.13% of the region and 9.87% of production level and 21.58% of the number of planted trees. According to these results, pomegranate production in Adıyaman had an increasing trend for a number of years.

Keywords: Adıyaman, Pomegranate, Production Potential, Growing

The Effect Of Some Boron Compounds On Physical And Mechanical Properties Of Particle Board

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Abstract

In this study boric acid (BA), borax (BX) and zinc borate (ZB) from the boron compounds having fire retardant effect were added to particleboards (PBs) and the effects on their some physical and mechanical properties were determined. Boron compounds were used by using 3%, 5% and 7% as powder with respect to oven dry weight of the chips in particle board production. Urea formaldehyde (UF) resin was used as a binder in the production of three-layer PBs in the ratios of 10% on surface layers, 8% in middle layer. Physical and mechanical properties of test boards were determined and evaluated statistically. According to results the highest internal bond strength (IB) of control boards was obtained as 0,40 N/mm², and the lowest IB of 7% BA and 7% ZB were observed as 0,22 N/mm². The lowest bending strength (BS) was found as 11,52 N/mm² when 7%BX was used, and the highest BS was obtained from control groups as 15,52 N/mm². While modulus of elasticity (MOE) was obtained 2024 N/mm² as average value from control boards, the lowest MOE value was observed as 1803 N/mm² when 5% ZB was used. As a result, it has been determined that use of boron compounds as fire retardants generally adversely affects the physical and mechanical properties of particle board in particle board production.

Keywords: Particle board, boron compounds, physical and mechanical properties, fire retardants.

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Total Water Amount Taken From The Drinking And Using Water Network In Turkey

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Abstract

Every period of human life cycle, nutrition, circulation, respiration, discharge, reproduction and so on. Water is a necessary material for the realization of vital activities. For this reason, water is a miraculous source of life indispensable for animals and plants, especially for humans. Although a large part of the earth is covered with water, only 2.5% is sweet. However, the world's clean water resources are running out in the face of global warming and population increases. 70% of this consumption is agricultural, 20% industrial and 10% domestic. Along with the growing population, it increases in the need for drinking and drinking water. According to the data obtained from the Turkish statistical institution, the total amount of water withdrawn for the drinking water network in 1994 was 3 million $m^3\text{year}^{-1}$, whereas in 2014 this value was determined as 5.2 million $m^3\text{year}^{-1}$. From the 899 thousand $m^3\text{year}^{-1}$ dams, the water taken in 1994, from the 1.3 million $m^3\text{year}^{-1}$ wells, from the 101 thousand $m^3\text{year}^{-1}$ rivers, from the 109 thousand $m^3\text{year}^{-1}$ lakes-ponds / seas, 837 thousand $m^3\text{year}^{-1}$ Have been obtained from the source waters. In 2014, these values are calculated from 1.8 million $m^3\text{year}^{-1}$ dams, 1.4 million $m^3\text{year}^{-1}$ wells, 652 thousand $m^3\text{year}^{-1}$ rivers, 290 thousand $m^3\text{year}^{-1}$ lake-ponds and seas, 985 thousand $m^3\text{year}^{-1}$ was withdrawn from the source waters. It has been determined in Turkey that the total amount of water withdrawn from the network for drinking and utility water increased by 73% from 1994 to 2014. It is of great importance to protect the decreasing water resources, to give importance to environmental pollution, to use drinking water more consciously and to transfer them to future generations. For this reason, municipalities should allocate a certain amount of budget for conscious use of water, conscious of the public and give necessary trainings accordingly.

Keywords: Water Resources, Drinking and Using Water, Water Network, Turkey

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The Effect Of Some Boron Compounds On Combustion Properties Of Particle Boards

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Abstract

Nowadays, wood based materials are used by being treated with various fire retardants (FRs) materials in order to reduce their tendency towards burning. Boron compounds are FRs materials that can be used for this purpose and have been extensively investigated. In this study, boric acid (BA), borax (BX) and zinc borate (ZB) from the boron compounds having fire retardant feature were added to particleboards (PBs) and their fire performance were investigated. For this purpose, wood chips that treated with urea formaldehyde (UF) resin in the ratios of 10% on surface layers, 8% in middle layer in the production of three-layer PBs were used. Each FRs were sprayed by using 3%, 5% and 7% as powder on wood chips treated with UF resin. Combustion properties such as mass loss, temperature change, released gases (O₂, CO and NO) of test boards were determined according to ASTM E 69 standard. According to the results of mass loss of control group without FRs were found as 51% when addition of 3%BA, 3%BX and 3%ZB to the chips, the results were as follows 24,5%, 40,4% and 44,3%, respectively. It was determined that mass loss decreases with increasing FRs concentration. Also, maximum temperatures of panels tested were reduced. Thus, samples with FRs burned slower than the control boards. In addition, increasing FRs utilization ratio in the fire environment has led to a decrease in O₂ consumption. It was proved that samples with FRs burned slowly and low mass loss was observed. As a result, boron compounds shown that fire retardant effect and their effect increases with increasing FRs concentration. It was determined that BA is more effective than the other boron compounds.

Keywords: Particleboard, fire performance, mass loss, maximum temperature.

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Development Of Private Agricultural Extension Services In Turkey

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Abstract

The development of the knowledge and skills of the people in the agricultural sector through various training activities, the improvement of rural life through agricultural production and income increase is the issue of agricultural extension. Agricultural extension is very important for small farmers, especially those with limited access to information and technology and these services are often provided by the public sector. Until now, public sector in agricultural publication has carried a great deal of importance in Turkey. However, the agricultural extension services provided by the private sector have also improved over time even it is limited. In this study, the private sector is considered separately from the public agricultural extension services development in this area. In recent years, the public sector has begun to make arrangements and self-reliance for the development of private consultancy and extension services. The legislative arrangements for the development of private agricultural extension services, persons and institutions providing agricultural advisory services, companies engaged in contractual agriculture, persons and organizations providing agricultural inputs and producers' organizations have been evaluated in this area. With the continuing support of the government in the agricultural extension services carried out in Turkey, this gradual increase in the private sector will provide efficiency and dynamism in extension services. Farmers can benefit from the different levels of agricultural knowledge and technology provided by the private sector. The continuity of state support for this area may increase the level of utilization.

Keywords: Agricultural extension, farmer education, private sector, Turkey.

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The Phenotypic Correlations Among Some Eggs and Poult Characteristics in Turkey

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Abstract

The aim of this study was to determine the egg weight, shape index, poult weight, width and length of shank, length of snood and feathering levels in poults and to search the relationships among these traits in a turkey flock. The correlation coefficients between the egg weight and the poult weight, between the egg weight and width of shank and between the egg weight and length of snood were found to be significant and positive ($r=0.616$, $P<0.01$; 0.173 , $P<0.01$; 0.083 , $P<0.05$, respectively). A significant ($P<0.01$) and negative correlation ($r=-0.187$) was found between width and length of shank. Poult weight was significantly higher ($P\leq 0.01$) in feathering score 4 than feathering score 1 and 2. It was seen that shank was significantly higher ($P<0.001$) in rapidly feathering poults than the others.

Keywords: Egg weight, shape index, poult characteristics.

Determination Of Antifungal Activities Of Leaf (Methanol) And Stem (N-Hexan) Extracts From Yellow Sandal Wood

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Abstract

This study, was carried out to investigate of yellow sandal wood (*Santalum album*) leaf (methanol) and stem (n - hexane) extracts antifungal activity against plant pathogens such as *Fusarium oxysporum* f. Sp. *Lycopersici* (Sacc.) W.C. SnyderveH.N. Hans (FORL), *Alternaria solani*(Ell. And G. Martin) (A.Solani), *Verticillium dahliae* (V. *dahliae*) and *Sclerotinia sclerotiorum* Lib De Bary (*S. sclerotiorum*), in the tomatoes, strawberries, potatoes and cucumbers also cause intense crop losses in our country and in the world. In order to examine the used plant extracts, percentages of mycelium inhibition (MGI) values were calculated to compare with the negative control.the plant extracts was used 100mg, 250mg ve 500 mg/ml doses. As a result, methanol extracts inhibited myelium growth of *V. dahliae*, FORL, *A.Solani* and *S. sclerotiorum* by 70.15%, 70.56%, 73.2% and 100% respectively. Stem extracts inhibited mycelial growth of FORL, *A.Solani*, *V. dahliae*, and *S. sclerotiorum* fungi by 60.6%, 62.61%, 66.38% and 83.35%, respectively. When the results are compared, it has been determined that the yellow sandalwood leaf is more effective against the pathogens used in the n-hexane extract of the methanol extract. As a result, natural antifungal bio-pesticides used today have a potential to fight against plant pathogens because they are cheap and environmentally sensitive.

Keywords; Antifungal, *S. album*, *A. solani*, *V. Dahliae*



Optimization of Microwave Extraction of Pectin From Grapefruit Peel

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Abstract

Pectin, a polysaccharide, linear polymer of 1, 4 α linked D-galacturonic acid unit with varying degrees of methylation, has been widely used in food, cosmetic and pharmaceutical industries. The most widely used method for the production of pectin is boiling of the pectin sources in acidified water, followed by coagulation with ethanol. However, this method is a time and energy consuming process. Lately, microwave assisted extraction has shown that it can be successfully used for the production of pectin. Extraction of pectin from grapefruit peel was carried out in a microwave oven with acidified water using sulfuric acid. Extraction conditions were optimized in terms of pH (1, 1.5, 2), solvent: solid ratio (20, 30, 40), and extraction time (30, 60, 90 s) at microwave power of 360 W by response surface methodology, using Box- Behnken design. The optimized condition was found to be pH 1, solvent: solid ratio and extraction time of 90 second and under the optimized conditions pectin yield was found as 21%.

Keywords: grapefruit, pectin, extraction, microwave

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Effect Of Organic Based Trace Mineral Plus Vitamin D Mixture On Egg Production And Egg Shell Quality Of Broiler Breeder Hens

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Abstract

The present study was aimed to determine effect of organic based mineral plus vitamin D mixture containing zinc, manganese, iron, copper, phosphorus, magnesium, calcium, and vitamin D on egg production and egg shell quality of broiler breeder hens. The study was carried out at The Research and Development Poultry Facility of Çukurova University. A total of 200 Ross 308 broiler breeder hens were divided into four treatment groups with 5 replicates of 10 birds each. Control group was fed a diet formulated without organic mineral/vitamin mixture, and other three groups' diets were supplemented with 1.0, 1.5, and 2.0 kg/tonne organic mineral/vitamin mixture respectively. According to data obtained in the first four weeks of trial showed that organic mineral/vitamin mixture supplement increased egg production, egg weight and mass. Feed conversion efficiency was numerically greater in broiler laying hens fed the supplemented diet. The supplement increased eggshell strength significantly. In addition there was a decrease in damaged egg rate and a increase hatching eggs ratio. It was found that the dietary supplementation of organic mineral/vitamin mixture had positive impacts on egg quality parameters, especially the diet supplemented with 1.0 kg/tonne increased egg production, egg size, eggshell strength, and hatching eggs ratio. It could be concluded that organic mineral/vitamin mixture may supply significant profits when considering increased broiler meat production due to high hatching eggs. This research was financially supported by the Cukurova University Scientific Research Projects Coordination Unit (ÇU-BAP) under a research project (No: FBA-2014-2449). The authors gratefully acknowledge ÇU-BAP for financial support.

Keywords: broiler breeder hens, organic mineral/vitamin mixture, egg production, egg Shell strength.



Membrane Processes for the Concentration of Fruit Juices

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Abstract

Fruit juices are beverages that have high nutritional value since they contain plenty amounts of beneficial compounds for human health. To reduce the storage, transportation and packaging costs, fruit juices are generally concentrated. Juice concentrates are also more stable, presenting higher resistance to microbial and biochemical deteriorations. Concentration of fruit juices is generally carried out by thermal evaporation, resulting in a loss of fresh juice flavors, irreversible alteration of nutritional and organoleptical characteristics due to the thermal effects. At this point, juice concentration by using membrane systems is a promising alternative for improving product quality. Reverse osmosis (RO) can be used for concentration at ambient temperatures, hence minimizing the damages caused by the utilization of heat. However, maximum concentration of juices by RO is restricted to around 25°Bx due to the osmotic pressure limitation. This limitation can be overcome by continuing juice concentration by membrane distillation (MD) or osmotic distillation (OD). These membrane processes are allowing high concentrations (above 60°Bx) to be reached under atmospheric pressure and near ambient temperature. The driving force of the process is given by a water vapor pressure gradient across the membrane, induced by a temperature difference for the MD process, or by the water activity difference between the juice and an osmotic solution in the case of the OD process. MD and OD processes can be coupled to enhance water flux. Moreover, integrated membrane processes involving clarification by ultrafiltration, preconcentration by RO, and concentration by MD, OD, or coupled operation of MD and OD can also be applied to achieve high quality juice concentrates.

Keywords: fruit juice, reverse osmosis, osmotic distillation, membrane distillation, concentration

Pastırma And Protein Oxidation

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Abstract

Pastırma is a dry-cured traditional meat product with a limited fermentation. Pastırma is an important meat product because of its high protein content and quality and typical sensory properties. During the production of pastırma, proteins, which are important macro components of meat, are also important contributors to the formation of quality. Myofibrillar proteins are affected by protein oxidation and can occur changes in the ultra-structure of proteins. Protein oxidation is defined as the covalent modification of proteins induced either directly by reactive oxygen species (ROS) ($\cdot\text{OH}$, $\cdot\text{OOH}$ etc.) or indirectly by reaction with secondary products of oxidative stress. Proteins playing an important role in oxidative damage are oxidized by reactive oxygen species formed by ionizing radiation, metal ion catalyzed reactions, photochemical processes and enzyme catalyzed redox reactions. Hydroxylation of aromatic groups and aliphatic amino acid side chains, nitration of aromatic amino acid radicals and sulfhydryl groups, sulfoxylation of methionine, chlorination of aromatic and primary amine groups, modification of amino acid side chains to hydroxyl or carbonyl derivatives, formation of protein-protein cross-links, breakage of polypeptide chains and the formation of some radicals (most important alkoxyl radicals) are consequences of protein oxidation. Furthermore, functional protein groups form inactive derivative compounds by reacting with some carbohydrate derivatives, oxidation products of polyunsaturated fatty acids such as 2-alkenal, 4-hydroxy-2-alkenal and ketoaldehydes. However, protein carbonyl group is the most commonly used indicator of protein oxidation. The formation of carbonyl compounds is one of the most important changes that occur throughout protein oxidation. Specific protein carbonyl compounds such as α -amino adipic (AAS) and γ -glutamic semialdehyde (GGS) are active compounds in some reactions affecting on the quality of the meat. Especially the formation of protein carbonyls from amino acid side chains contributes to the disruption of the structure of myofibrillar proteins leading to denaturation and loss of function.

Keywords: Pastırma, protein oxidation

Effects Of Colchicine Applications On Morphology And Ploidy Level Of Buds In Tekirdağ Misketi And M.Palieri Grape Varieties

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Abstract

This research was carried out in 2015 at Tekirdağ Viticultural Research Institute vineyards with M.Palieri and Tekirdağ Misketi grape varieties. In this study colchicine was applied to buds of M.Palieri and Tekirdağ Misketi grapes. In the study, active buds of M.Palieri and Tekirdağ Misketi varieties were followed from the beginning of vegetation. The stage in which the buds are green-tipped is considered as the stage of riding. Colchicine was applied between the cottonized phase and the green-tipped phase. When the buds started to sprout (1st week of April), the buds were treated with cotton impregnated with colchicine solution. 8 applications were made with 4 doses (0% (Control) - 0.4% - 0.8% - 1.2%) and 2 time (48 and 96 hours) combinations. It has been determined that the viability ratio of the shoot tips after application of both types of coatings is 100% compared to application of the colchicine solution-impregnated cotton of different doses to the buds. When the effect on the length of shoot (cm) of the colchicine application were analyzed statistically, the statistical differences between colchicine doses and durations of M. palieri were not significant. In the Tekirdağ Misketi variety, the length of the shoots decreased. In the result of the flow cytometry analyzes of leaf samples taken from plants, it was determined that diploid construction continued in all samples and the applied colchicine did not change the number of chromosomes. The DNA content of the samples was determined to be 1.00 pg diploid (2n) graft size.

Keywords: Colchicine, Polyploidy, Grape, Bud



Developing Silage Maize Hybrids With The Cooperation Among Public Agricultural Research Institutes Of Turkey

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Abstract

Due to the need for silage maize in livestock sector, its production in Turkey is increasing. Approximately 32% of the total maize plantings area of Turkey is being used to produce silage maize. Although, both public and private sector organizations released new high yielding and quality hybrids, there is still a gap for different hybrids that have high yield potential and good enough for different environments. To meet the mentioned gap, a collaboration between national agricultural research institutes which have been working on maize was initiated. Silage maize inbred lines that developed by different institutes were used in a hybridization programme. During hybridization studies, genetic background of the inbred lines and their yield and quality potential was considered. Experimental hybrids and commercial checks were tested in different locations of Turkey. Every year at least 15 experimental hybrids were evaluated in at least four locations of Turkey. Promising hybrids were determined and used for further investigations by the breeders. The first mutual silage maize hybrid, SAMADA-07 released in 2009. This hybrid's male and female parents belong to two institutions. Another mutual silage maize hybrid AGA is now available for farmers. SASA-5 hybrid also will be released in a near future. In this study, past and present collaborative efforts on silage maize hybrid development by national agricultural research centers of Turkey were presented and experiment results from different sites were discussed.

Keywords: Maize breeding, animal feed, variety development, yield, quality



Changes in Total Phenolics and Anthocyanins of Cornelian Cherry Marmalade During Storage

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Abstract

Cornelian cherry fruits are an important source of bioactive compounds, especially phenolics and anthocyanins which exhibit a high antioxidant activity, and are either consumed directly as fresh or processed into various products including marmalade. The aim of this study was to monitor the changes in total phenolics and anthocyanin contents of Cornelian cherry marmalade during 6 months of storage at two different temperatures (4°C and 20°C). Cornelian cherries processed into marmalades by traditional method, and the content of phenolic compounds and anthocyanins were determined directly after production and after every months of storage by spectrophotometric methods. Total phenolics content decreased by only about 4-5% in all samples throughout the four months of storage. However, reduction ratios of phenolics were very high within the last two months of storage, and found to be 30.7% and 36.9% in samples stored at 4°C and 20°C, respectively. Results indicated that the degradation of anthocyanins followed first-order reaction kinetics. As expected, higher stability of anthocyanin was observed in samples stored at 4°C, with half-life and degradation rate constant values of 5.46 months and 0.1270 month⁻¹, respectively. These kinetic values were determined as 3.09 months and 0.2245 month⁻¹ in the case of storage the samples at 20°C.

Keywords: Cornelian cherry, total phenolics, anthocyanins, marmalade

Effects Of Compost Applications On Some Nutrients And Nitrate Accumulation Of Spinach (*Spinacia Oleracea L.*)

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Abstract

New approaches at the plant production gain importance because of the environmental problems caused by the intensive use of agricultural chemicals in traditional methods. Combined application of inorganic and organic fertilizers not only increase the yield in the vegetable; reduces the accumulation of nitrate. For this purpose, materials such as animal wastes and compost have been widely used. This study, which was carried out under open greenhouse conditions, investigates the effects of different doses of hazelnut husk compost, enriched compost and farmyard manure (0 g kg⁻¹, 40 g kg⁻¹, 80 g kg⁻¹, 160 g kg⁻¹) and nitrogen fertilizer (CAN) applications on essential nutrient contents and nitrate accumulation of spinach (*Spinacia oleracea L.*) in winter season. Generally, compost and farmyard manure applications increased significantly plant growth and nutrient content; N, NO₃⁻ and K contents were higher in 8% enriched compost application, whereas P content gave the best results in 8% farmyard manure application. Nitrogen fertilizer application was not have an effect on the N and P content of the plant, but it increased the NO₃⁻ and K contents. The use of compost products were increased the N content of plants that did not have fertilizer application, and these materials mixed with soil increased the fertilizer efficiency too. We determined that the use of compost caused higher nitrate accumulation in the plant than in the farmyard manure, but did not reach the limit values. As a result, compost applications were effective enough to compete with farmyard manure on nutrient concentrations and accumulation.

Keywords: *Spinacia oleracea*L., Organic material, Nutrient elements, NO₃⁻

Evaluation of Selected *Thymbraspicata* Genotypes As Vegetable And Spice

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Abstract

Zahter (*Thymbraspicata* Var. *spicata*) is one of the famous spices in the Southern Mediterranean cuisine. Although *Origanum* spp., *Thymus vulgaris*, *Satureja thymbra* and *Coridothymus capitatus* have similar flavor characteristics with *T. spicata*, they cannot preferred instead of *T. spicata*. This study was conducted to determine some plant characteristics of 4 selected *T. spicata* genotypes in Kozkalesi village, Hatay/Turkey. The shoot length varied between 5.3 and 8.6 cm, the leaf length varied between 17.4 and 29.1 mm and the leaf width varied between 2.7 and 4.4 mm, the lowest and the highest measured values for these measured parameters were obtained from genotypes Koz4 and Koz3, respectively. The fresh leaf weight varied between 79.7 and 119.3 g, and the dry leaf weight varied between 16.1 and 34.4 g. The lowest and the highest leaf fresh and dry weights were obtained from Koz4 and Koz1 genotypes, respectively. The essential oil content of young shoots varied between 3.5 and 3.9 %. The main essential oil components were carvacrol, thymol, p-cymene, α -terpinene. The genotypes Koz1, Koz2 and Koz3 were highly suitable more spice usage and Koz4 was highly suitable for vegetable usage. Young fresh *T. spicata* shoots are basically used to make salad as a vegetable and dried shoots are used as spice and herbal tea.

Keywords: Essential oil, essential oil components, *Thymbraspicata*, traditional usage

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— Cappadocia/Turkey —

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The Effect of Different Pear Rootstocks on the Performance of Pear Cultivars Grown in Semi-Arid Climatic and High Calcareous Soil Conditions

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Abstract

Rootstocks in fruit growing affect the performances of the cultivated varieties which have been overgrown, such as tree growth, yield, earliness, fruit quality, flowering, fruit setting, content of nutrients in leaves and fruits. In this study, in summer very high temperatures seen in the GAP Region (Sanliurfa-Turkey), and high lime soil conditions with a ratio in wild quince seedling, clonal quince A (*Cydonia oblonga* Mill.) and BA 29 (*Cydonia oblonga* Mill.) some pear cultivars budded on rootstocks performance was studied. In the study, some pomological and phenological characteristics of 6 pear cultivars (Abbe Fetel, Akça, Bella di Giugno, Coscia, Deveci, and Dr. Jules Guyot) planted in 2004 in Sanliurfa conditions were determined. Bud swell and bud bursting occurred on different rootstock in March, and flowering occurred in April. Among the pear cultivars, the earliest flowering cultivar of pear is Akça (27 March), while the earliest fruit ripen variety is Bela di Giugno (01 July). Among the varieties, The latest variety for fruit ripening has been identified as Deveci. Among the pear varieties studied, the heaviest (451.16 g), the widest (92.28 mm) and the largest volume (428.39 cm³) of fruits were Deveci on the clonal Quince A rootstock, while the longest fruit was Abbe Fetel (114.64 mm) and the highest fruit flesh firmness was determined Deveci cultivar (19.22 kg/cm²) budded on seedling rootstock. The total soluble solid matter content in the cultivars varied from 13.50-15.95% and the titratable acid content varied from 0.33-0.56%.

Keywords: Pear, Pear rootstocks, *Pyrus communis* L., *Cydonia oblonga*, BA 29, Phenology, Pomology

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The Effect of Some Rootstocks on the Physical and Chemical Properties of Fruit Growing Process in Anna Apple Cultivar

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Abstract

The apple that grows in temperate, especially cold-temperate climatic regions between latitudes of 30° -50° in the world is successfully grown in subtropical climatic conditions with the use of cultivars with the low chilling requirement. In this study, the phenological, pomological and some chemical characteristics of 'Anna' Apple cultivars on different rootstocks were determined in Sanliurfa conditions which showed a semiarid climatic characteristic between 2013 and 2014. In the research, fruit diameter measurements were made with fruits at intervals of 5 days from fruit set to fruit harvest. According to the obtained results, it was determined that the growth of fruit diameter on three different rootstocks of Anna apple cultivars showed a growth that would form a single sigmoid curve. It has been determined that the Anna apple cultivar budded to the different rootstocks reached the earliest full flowering stage (18 March) and the earliest harvest (05 July) on the M9 rootstock. The largest fruits are MM 111 (221.42 g), the smallest fruits are seedlings (179.76 g), the highest amount of soluble solids content (14.8%) and the lowest amounts of titratable acid (0.61%) were obtained from trees on seedling and MM 111 rootstocks, respectively. The time from full flowering to harvest in Anna cultivar varied from 109 days (M9) to 115 days (seedling rootstock).

Keywords: Apple rootstocks, Anna apple cultivar, Fruit growth, Fruit set ratio, Flower drop, M9



Boron Affects Some Pollen Features And Fruit Set Of Apricot

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Abstract

There are many factors that influence fruit set, including flower bud induction, flower development, and pollination. Boron plays an important role on fruit trees pollination and resulting fruit set. This study was carried out to determine the effects of foliar boron (B) application on leaf B concentration, pollen viability and pollen germination rates of P. de Thyrinte and Aprikoz' apricot trees (*Prunus armeniaca*), and on fruit set of open, artificially and self-pollinated Aprikoz trees. The experiment was conducted in the Research and Application Orchard of the Department of Horticulture at the Faculty of Agriculture of Harran University in Turkey. The B treatment rates were 0 (water-sprayed control), 250 ppm, 500 ppm and 750 ppm in two consecutive experimental years. Sprays were applied at the end of autumn and at bud swelling time in spring. There was an increase on pollen viability and pollen germination in both two years and cultivars for B application. Boron application improved fruit set on Aprikoz trees that were artificially pollinated using P. de Thyrinte pollen. Similarly, this effect was observed on open pollinated trees also. Self-pollinated trees had total crop loss due to self-incompatibility characteristic of Aprikoz cultivar. Boron application increased leaf B concentrations in both cultivars in both years. The results indicate that there is a generally beneficial effect of applying B to apricot trees grown under the low soil B conditions.

Keywords: *Prunus armeniaca*, micronutrient, tree fruit, foliar spray, leaf analysis



Investigation On Fruit Growth And Development Of Some Early Maturing Apricot Cultivars In Semi-Arid Conditions

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Abstract

Fruit development process varies in different fruit groups. Determination of fruit growth stage is of importance in terms of orchard management such as time of irrigation, fertigation, thinning and harvesting, etc. This study was conducted on the fruit growth and development of Bella d'Imola, Castelbrite, San Castrese and Sungiant apricot cultivars in Şanlıurfa (Turkey) during 2011 and 2012. Fruit weight, fruit volume and fruit dimensions of four apricot cultivars were determined at five day intervals from fruit setting till fruit harvest. Fruit sampling for TSS and total acid contents were made with ten days intervals just after thirty five days of full bloom and with five days intervals in harvest stage. In these cultivars, three developmental stages were observed as "fast,"-"slow,"- and "fast" during the fruit growth. At all apricot cultivars the significant increases were noticed in the first growth stage in fruit dimensions while the increases in weight and volumes were observed in the third growth stage. During the growth period of fruit TSS content continuously increased whereas total acid content decreased. It was determined that the varieties for fruit maturation should pass at least 65 (Bella d'Imola) - 80 days (San Castrese) until full blooming.

Keywords: Apricot, Fruit growth and development, Harvest



Konvansiyonel ve Otomatik Meteoroloji İstasyon Verilerinden Hesaplanan Referans Evapotranspirasyon Değerlerinin Kıyaslanması

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Özet:

Sulu tarımda bitki evapotranspirasyonunun (ET_c) doğru ve güvenilir tahminleri, sulama ve su kaynaklarının planlanması ve yönetilmesi ve su kaynaklarının etkin kullanımı için önemlidir. ET_c'nin tahmin edilmesindeki en yaygın yöntem, referans evapotranspirasyon (ET_o) değerlerini bitki katsayısı (K_c) ile düzeltmektir. Bu yöntemde, referans parametreler ve agrometeorolojik veriler kullanılarak standart bir yüzey için bir ET_o hesaplanır. Daha sonra ET_c'nin hesaplanması için, ET_o uygun bitki katsayısı ile çarpılır. Meteorolojik verilerden ET_o elde etmek için FAO Penman-Monteith (FAO PM) yöntemi standart yöntem olarak önerilmiştir. Evapotranspirasyon ve/veya referans evapotranspirasyonunun hesaplanmasında kullanılan meteorolojik veriler konvansiyonel (sinoptik) veya otomatik istasyonlardan alınmaktadır. Konvansiyonel ve otomatik istasyonlarda kullanılan alet ve yöntemlerin farklılığından dolayı, elde edilen veriler de farklı olmaktadır. Dolayısıyla, bu çalışmada, bir sinoptik ve bir otomatik istasyondan alınan sıcaklık ve bağıl nem verilerinin kullanılması ile elde edilen ET_o değerlerinin karşılaştırılması amaçlanmıştır. Karşılaştırma kriterleri olarak (t) testi, kök ortalama karesel hata (RMSE) ve bağıl hata (RE) kullanılmıştır. İki farklı istasyondan elde edilen günlük ET_o değerlerinin; (t) testine göre önemli derecede farklı olduğu ($p \leq 0.046$), RMSE değerinin kabul edilebilir hata sınırının altında ($0.304 \text{ mm gün}^{-1}$) ve RE değerinin % 9.16 olduğu anlaşılmıştır. Aylık ortalama ET_o değerlerinin (t) testine göre önemli derecede farklı olmadığı ($p \leq 0.704$) ve RMSE ve RE değerlerinin günlük değerlerden daha düşük ve kabul edilebilir (RMSE= $0.188 \text{ mm gün}^{-1}$ ve RE= %8.90) olduğu anlaşılmıştır.

Anahtar Kelimeler: Otomatik istasyon, referans evapotranspirasyon, sinoptik istasyon, sulama planlaması

Effect Of Different Drying Methods On Antioxidant Activity And Phenolic Content Of Bee-Pollen

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Abstract

In this study, effect of drying methods on anti-oxidant capacity (DPPH+ radical scavenging activity (DPPH), ferric reducing antioxidant power (FRAP)) and total phenolic content of the extracts of fresh and dried bee pollen samples were investigated. Tray dryer, vacuum oven and freeze dryer were used for drying of bee pollen. Effects of extraction solvents (methanol, ethanol, acetone and water) on the total phenolic content and antioxidant capacity of dried bee pollen were also investigated. Pollen used in this research was polyfloral bee pollen collected from center and nearby cities of Antalya. It was determined that methanolic extract of dried bee pollen has a total phenolic content (TFC) ranging from 4.27 to 8.44 mg GAE/g dry pollen and antioxidant capacity ranging from 74.04 to 94.77 TEAC/g dried pollen. In DPPH+ assay, the highest antioxidant activity with IC₅₀ value ranging from 2.64 to 3.06 mg/ml was observed in bee pollen extracts obtained by using ethanol as solvent. It was concluded that extracts obtained by using methanol as solvent showed the highest activity in FRAP analysis while extracts obtained by using ethanol as solvent showed the highest activity in DPPH analysis. It was determined that amount of phenolic compounds in fresh and dried bee pollen samples ranged between 12.22 and 14.11 mg GAE/g dried pollen in terms of gallic acid and between 25.87 and 29.83 mg CAE/g dried pollen in terms of chlorogenic acid.

Keywords:Bee-pollen, Drying, Antioxidant capacity, Phenolic content

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Nutritional Profile And Health Benefits Of Walnut (*Juglans Regia L.*)

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Abstract

Walnut (*Juglans regia L.*) is a worldwide plant in all over the world. These fruits have attention because of including plant protein, dietary fiber, melatonin, plant sterols, tannins and polyphenols which is beneficial for the human health. Walnuts are also rich plant for the essential fatty acids and tocopherols. Consumption of walnuts decrease some kind of diseases, such as risk of coronary heart disease, risk of cancer and cholesterol etc. In addition walnuts containing phenols have antioxidant activity. In this study, literature was examined and nutritional profile and health benefits of walnut was summarized.

Keywords: Walnut, health, phenolic, antioxidant,

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Effects of Core Layer Particle Sizes on the Some Mechanical and Physical Properties of Particleboard

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Abstract

In this study, use of middle layered chips on mechanical and physical properties of particle boards were investigated. For this aim, coarse chips were obtained from wood mixture (50% oriental beech and 50% quaking aspen) and retained on a jigging screen were grinded with grinding mill, they were passed through screens with meshes of 4x40 mm (Y1) and 5x50 mm (Y2). The experimental particleboards with size of 8x2100x2800 mm were produced with density of 700 kg/m³. According to test results obtained, use of longer chips in the middle layer affects positively the mechanical and physical properties of the boards. The best adhesion resistance, bending resistance, elastic modulus, surface soundness and thickness swelling and expansion values are attained with the test boards made of chips passed through Y2 type screen.

Keywords: particleboard, chip size, mechanical properties, physical properties

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Veri Madenciliği Tekniği (Karar Ağacı) İle Mobilya Türünün Seçimi Etkileyen Faktörlerin İncelenmesi

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Abstract

Data mining is the process of analyzing data from different perspectives and summarizing it into beneficial information. Data mining is a very important technique in determining customer behavior. However, the work done on this subject is limited. By analyzing customer behavior, consumer needs can be identified and satisfaction can be increased at the same time. In this study, factors (age, gender, marital status, child status) affecting the selection of the furniture type (classical and modern furniture) will be analyzed using decision tree which is one of the techniques of data mining. Our analysis is intended to guide future research and to assist in the accumulation of knowledge on the implementation of data mining techniques.

Keywords: Data mining technique, Type of furniture, Factors

**Effect of Phenological Stage on Saponin And
Proanthocyanidins of *Plantago Lanceolata* herbage*****Kanber KARA, Eray AKTUĞ, Berrin K. GÜÇLÜ, Erol BAYTOK**

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Abstract

The saponin and proanthocyanidins, which have anti-nutritional effects at high concentration and beneficial effects at low concentration for animal nutrition, are glycosidic and phenolic compounds, respectively. In this study was aimed to determine the saponin, proanthocyanidins, bound condensed tannin (BCT) and extractable condensed tannin (ECT) contents of *Plantago lanceolata* herbage in different phenological stages. The plant samples were gathered in the vegetative, flowering and early seed stages of *Plantago lanceolata* herbage. The saponin contents of dried herbage samples were determined spectrophotometrically in the methanol extracts. The phenolic compounds of samples were with butanol-HCl procedure. The contents of saponin in *Plantago lanceolata* herbage were changed a range from 3.53 to 3.87 mg/kg DM and these values were similar for different phenological stages ($P>0.05$). The proanthocyanidins content of *Plantago lanceolata* herbage linearly decreased with plant maturation (7.48-3.38 g/kg DM; $P<0.05$). For all phenological stages, the BCT concentration of herbage was lower than the ECT. The BCT concentration was a range from 0.79 to 1.70 g/kg DM; and the ECT concentration was a range from 2.44 to 6.36 g/kg DM. Consequently, *P. lanceolata* herbages in different phenological stage did not include at toxic levels for ruminants. In addition, these concentrations of saponin, proanthocyanidins, BCT and ECT in *Plantago lanceolata* herbage can be have positive effects on concentration ruminal methane and ammonia, and feed digestion.

Keywords: saponin, proanthocyanidins, bound condensed tannin, extractable condensed tannin.

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Determination Feed Value and In vitro Organic Matter Digestibility of Canola Silage

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Abstract

Canola seeds are mentioned frequently because of its contribution to the biodiesel production. Hays, silages, straws, stubble and stovers of canola are used as roughage source in ruminant nutrition. The aim of this study was carried out to determine the effects of wheat bran as silage additive on the fermentation and in vitro organic matter digestibility of canola silage. Canola harvested and ensiled in silo type of glass containers. Each application consist of 3 parallel. Chemical, microbiological analyses and in vitro cellulase method were conducted on the silage which was opened on the 60th day after it was ensiled. According to the analysis; control, %5 wheat bran and % 10 wheat bran groups was 14.31, 14.71 and 15.66; ammonia-nitrogen 91.53, 85.43 and 55.34; metabolizable energy 7.94, 8.27 and 8.51; organic matter digestibility 61.45, 63.93 and 62.92 respectively. In conclusion, addition of wheat bran can increase dry matter content of canola silage.

Keywords: Canola silage, silage additive, silage quality, in vitro, OM digestibility

Bingöl İli Yamaç mikrohavzası'nın Agro-Turizm potansiyelinin belirlenmesi ve kırsal kalkınma açısından değerlendirilmesi

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Özet

Dünyada gün geçtikçe önem kazanan turizm etkinliklerinden birisi de Tarım (agro) turizmidir. Son zamanlarda bu turizm çeşidi, başta gelişmekte olan ülkelerde hem kırsal kalkınmanın sağlanabilmesi hem de biyolojik çeşitlilik ve ekosistemi korumaya katkıda bulunmak amacıyla desteklenmektedir. Bu çalışmada Bingöl İli Yamaç Mikrohavzası örnek alınarak Murat Nehri Havzası Rehabilitasyon Projesi uygulaması sonrasındaki tarımsal turizm potansiyeli belirlenmekte ve kırsal kalkınma açısından bölgeyi destekleyici öneriler geliştirilmektedir. Bu bağlamda proje uygulamasının öncesi ve sonrası CBS ve senaryo analizleri yardımıyla belirlenmiş olup mevcut tarımsal arazilerin durumu, alanın agroturizme uygunluğu, bölgede agroturizm açısından yapılacak faaliyetler, agroturizm faaliyetleri içindeki yeri ve gücü sorularına yanıt aranmaktadır. Bölgede en çok yapılan tarımsal faaliyetler açısından (ceviz yetiştiriciliği, sebze ve arıcılık) agroturizm potansiyeli belirlenip kırsal kalkınma açısından bölgeye sağlanacak katkılar çalışmanın ana amacını oluşturmuş olup, yerel halk ve sorumlu kuruluşlar boyutunda öneriler geliştirilmiştir.

Anahtar Kelimeler: Yamaç Mikrohavzası, Agro-turizm, CBS ve uzaktan algılama, Senaryo analizi

Applications of Electric Field and Natamycin Combinations on *Saccharomyces cerevisiae* Spoilage in Fresh Orange Juice

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Abstract

Citrus juices are acidic beverages (ca. pH 3 to 5) with high sugar content. Yeasts can tolerate high osmotic and low-pH conditions and grow at refrigeration temperatures and so they can cause spoilage in citrus juice. This spoilage must be prevented without loss of color and nutrients. Although thermal treatment prevents the growth of microorganisms, it causes the loss of nutrients and color in the final product. Therefore nonthermal treatment such as electric field, ultrasound and high hydrostatic pressure processing and natural chemicals can be used for this purpose. In this study, combination of pulsed electric field and natamycin application effects on *Saccharomyces cerevisiae* spoilage and quality characteristics of orange juice has been examined. *S. cerevisiae* was first incubated (approximately 7.14 kob/ml) in freshly squeezed orange juice. 1800 to 2500 volts electric field intensity (13µs-50hz wave frequency) was applied intermittently (1 pulse per minute) for 5, 10 and 15 minutes in the inoculated orange juice. The application of 2500 volts-15 minutes provided approximately a 2.5 log reduction in the number of *S. cerevisiae*. Natamycin was added to the inoculated orange juice at different concentrations (6, 12, 25 ve 50 mg/L) after the electric field applied (2500 volts-15 min). Treated and untreated orange juice samples were stored for 15 days under refrigerator conditions. The application of 2500 volts-15 min and 25 ppm natamycin at the end of storage resulted in a total of 5.1 log reduction in the number of *S. cerevisiae* (p<0.05). Also the quality parameters of all samples such as pH, color, phenolic compound, ascorbic acid, antioxidant and hydroxymethylfulfural were compared. A small difference was observed in the content of ascorbic acid, color and phenolic substance, while no significant difference was observed in the pH, brix, antioxidant and HMF values of the treated and untreated samples.

Keywords: Natamycin, Electric Field, *S. cerevisiae*



Organic Cotton

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Abstract

Cotton fiber is one of the high consumable natural fiber in the world fiber consumption. Conventionally cotton growing requires high amount of chemical fertilizers and pesticides where 25% of total world pesticide consumption and the highest 4th place of chemical fertilizers consumption are realized in the modern cotton cultivation. In an average number, the amount of total fertilizer consumption is reported as 33% of raw cotton in weight. The World has started to become polluted and changed as result of industrialisation in such high rate as never seen in any previous time; such as demolition of ozon layer; destruction of ecological life; pollution of weather, water and soil. The interest in environmental pollution increased during the 80's all over the world in all areas, in fiber and textile sectors as well. Some precautions are taken into consideration in textile area, that organic cotton production is one alternative. Organic cotton is grown using well defined methods and materials that have low impact on the environment. The goal of organic fibre production is to protect the natural sources and people health, besides all animals, plantation, and also sustainable life conditions. Organic production systems replenish and maintain soil fertility, reduce the use of toxic and persistent pesticides and fertilizers, and build biologically diverse agriculture. Certification of organic fibres needs some hard procedure such as ceasing the use of pesticides, chemical fertilizers before three years followed by organic cultivation; using only permissible substances; covering physically the borders of cultivation fields; cultivating some trap plantes if necessary; using organic manure, enrichment of soil organically. The organic cotton becomes a new business prospect that more than 30 textile brands have already introduced their organic cotton collections. The organic cotton business is predicted to become a constantlywidening issue in the future.

Keywords: Cotton fiber, Organic ,World textile sector, Environment



The Effect Of Ultrasound-Assisted Osmotic Dehydration Pretreatment On Rehydration Characteristics Of Dried Pumpkin Slices

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Abstract

Different pretreatments were applied to foods before drying to decrease drying time and preserve the quality of dried product. The aim of this work was to determine the effect of ultrasound-assisted osmotic dehydration as a pretreatment on rehydration characteristics of dried pumpkin slices. Ultrasound-assisted osmotic dehydration treatments were carried out by using sucrose solutions at two different concentration (40, 60°Brix) for three different exposure times (40, 80 and 100 min) at 30°C. Solid to fruit ratio was 1:4. After pretreatment, pumpkin slices were subjected to air-drying, vacuum drying and freeze-drying. Results showed that pretreatment had a significant effect on rehydration properties. For all dried samples, lowest rehydration values were obtained at 60°Brix osmotic solution concentration for 120min pretreatment time. Freeze drying provided the best rehydration properties as compared to other drying methods. Peleg model was used to describe the rehydration process of the pumpkin slices. Moreover, the microstructure of the dried pumpkin slices was examined using a scanning electron microscope.

Keywords: Drying, Osmotic dehydration, Ultrasound, Pumpkin

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Correlation and path coefficient Analysis for some fresh ear yield related traits in Sweetcorn (*Zea mays saccharata* Sturt.)

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Abstract

The correlation between fresh ear yield components and other characteristics of sweet corn were investigated with correlation and path analysis in a Randomized Complete Block Design with four replicates in Black Sea Agricultural Research Institute Ambarkopru test station in 2010-2012 maize growing season. Possible all single relationships among 20 characters analyzed in our work were examined. According to the result it was determined that statistically, significant positive correlation was determined statistically between fresh ear yield and maturity, ear length, ear diameter, kernel row number, single ear weight, fresh cob weight, number of leaves per plant, number of marketable cobs, fresh grain weight, protein ratio and soluble dry matter content. Also, significant negative correlation was determined between fresh ear yield and plant height, cob tip clearance. On the other hand non-significant correlation was determined between fresh ear yield and flowering time, ear height and oil ratio.

Keywords: Sweetcorn, fresh ear yield, correlation coefficient, path analysis



Effects Of Aspect On Gas Exchanges, RWC And Chlorophyll Contents In Sessile Oak Trees

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Abstract

Mountain forests, which occupy 23% of the world's forest cover, are home to about 12% of the global human population. Aspect is an important factor that defines position of plants to sun and limits growth and development. Sessile oak is one of the wide spread important species of our country forest mass. In the present study, some physiological parameters such as stomatal conductance, photosynthesis rate, chlorophyll content and plant water status on sessile oaks which were positioned to south-west and south-east facing slopes were evaluated in Artvin (Türkiye). When analysed at the findings, the values of photosynthetic rate and stomatal conductivity was increased with the influence of the long sunshine period in sessile oak trees growing in west-facing aspect. It has also been found that the specific relative water content has higher values in west-facing aspect compared to east-facing aspect. Moreover, SPAD analyzes showed that the effect of the aspect did not affect the content of chlorophyll. As a result, it has been observed that the westernized geographical location promotes gas exchange parameters and plant water status make more efficient and effects the physiological parameters of the plant positively.

Keywords: Aspect, Sessile Oak, photosynthesis, stomatal conductance, chlorophyll content, RWC



Determination Of Infiltration And Aggregate Stability Properties Of Treated And Untreated Agricultural Lands

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Abstract

Soil and water are our most important natural resources, two components of plant production. As a result of misuse or unconscious use of these resources, there are many problems in the field. Especially agricultural activities such as irrigation, fertilization and mechanization can result in deterioration of soil structure. Decompositions occurring in the soil structure can affect the water permeability and aggregation properties of the soil. The study was carried out to determine the infiltration (water permeability) and aggregate stability properties of the soil in the Bingöl Plain that is about 850 ha area, in the treated and untreated land. According to the results of the research has founded, the infiltration rate of the treated soils is generally lower than that of the untreated soils and the aggregate stability has founded higher than that of the untreated soils.

Keywords: Soil, Infiltration, Aggregate Stability, Land Use



Alternative Approaches To Synthetic Fungicides For Postharvest Disease Control Of Fresh Produce

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Abstract

Postharvest diseases caused by fungal growth lead to considerable economic losses in fresh produce. Synthetic fungicides are commonly used during growing and postharvest storage of fresh produce in order to prevent diseases and to obtain high crop yields. However, pesticide residues in fresh fruit and vegetables have drawn attention by health and regulatory authorities and consumers in many countries over the past few decades. Many countries aim to reduce or eliminate pesticide residues particularly in fresh fruit and vegetables. Beside that, consumer behaviour tends to buy organic products which are not permitted to treat with synthetic fungicides or pesticides. Thus, there have been increasing numbers of studies on finding natural, safe and effective alternatives to synthetic fungicides for reducing postharvest losses of fresh fruit and vegetables. Alternative biocontrol methods by utilization of essential oils, plant extracts, antifungal peptides, and carbohydrate solutions are becoming increasingly challenging due to the restrictions on the use of fungicides on fresh produce. These natural antifungal compounds are generally regarded as safe (GRAS) substances having antifungal activity and low impact on the environment. The present review attempts to highlight the current state of different alternative biocontrol approaches for postharvest disease control of fresh produce and to give also overview of advantages and disadvantages.

Keywords: Fungicides, Biocontrol, Postharvest disease, Fresh produce

Bioavailability of Phenolic Compounds in Raw and Blanched Broccoli

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Abstract

Broccoli (*Brassica oleracea*) is known as a healthy food due to its low calories, high fiber, phenolic and antioxidant content. Phenolic compounds are protective against several degenerative diseases such as cancer, cardiovascular ailments, diabetes, metabolic syndrome and they exhibit antimutagenic, high antioxidant and antitumoral properties. Broccoli can be eaten raw, steamed or boiled. In this research, the effects of blanching process on phenolics, flavonoids and the effects of *in vitro* digestion on phenolics, flavonoids of raw and blanched broccoli were studied. During *in vitro* digestion, post gastric fraction (PG), fraction that can enter the serum (IN), fraction that cannot enter the serum and remains in the gastrointestinal tract (OUT) were collected, and then bioavailability values of total phenolic content (TPC) and total flavonoid content (TFC) were determined. Blanching process reduced TPC and TFC significantly ($p < 0.05$). At the end of gastric phase, TPC of raw and blanched broccoli increased significantly ($p < 0.05$). At the end of gastric phase, TFC of raw and blanched broccoli is also increased, but insignificantly ($p > 0.05$). After intestinal digestion, OUT and IN values of TPC and TFC in raw and blanched broccoli were significantly lower than PG values ($p < 0.05$). Bioavailability of TPC was 20.54% and 31.72% in raw and blanched broccoli respectively; bioavailability of TPC in blanched broccoli was significantly higher than raw broccoli ($p < 0.05$). Bioavailability of TFC was 1.43% and 4.57% in raw and blanched broccoli respectively; bioavailability of TFC in blanched broccoli was higher than raw broccoli.

Keywords: broccoli, phenolic, bioavailability, blanching, *in vitro* digestion

Investigation Of Usage Possibilities Dyed Material From Cherry Wood Bark In Color Paper Production

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Abstract

Paper can be exposed to external influences such as mechanical, physical and biological depending on place of use. One of these effects is sunshine. When paper exposed to direct or indirect sunlight changes color. Depending on the place of use, it is expected that the color of the paper will not be affected by the sunlight or that it will provide long-term strength. In this study, some of the hardwood, the bleached pulp produced by the chemical-thermomechanical pulp (CTMP) method was used. For the coloring of paper pulp, the cherry bark was boiled with water and 1-2% KOH. According to the control papers, 1-2% of aluminum sulfate was added as a mordant to increase the durability of the paint. The resulting papers were subjected to accelerated aging test with a maximum of 150 hours at a light intensity of 0.85 W/m². Color and opacity measurements were made from the surface of the samples subjected to aging test for 10-25-50-100-150 hours. After a period of 150 hours, minimum color changes were obtained with In the group of 2% screed in the water of cherry wood crusts.

Keywords: Cherry bark, Chemical-thermomechanical pulp (CTMP), Paper, Weathering

The Performance of Forest Wastes in The Removal of Dyes from Waste Water

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Abstract

Wastewaters polluted with dyes must be subjected to a treatment before they are discharged to adversely affect the live life of the receiving environment. Adsorption process is one of the commonly used methods of color removal from wastewater treatment. Although different materials have been used as an adsorbent, the adsorption capacities of the forest wastes have investigated to the reducing of the cost for the treatment systems, recently. In this study, methylene blue removal from aqueous solutions and *Fraxinus excelsior*, a forest waste, were used as adsorbent; the effects of initial pH values (2, 3, 5, 5.9, 7, 8, 11) on the adsorption of methylene blue at 100 mg / L were investigated. The methylene blue removal was studied by adsorption method in synthetic waste water by batch system. The biosorbent removal yield was 99.1% and the optimum pH value of synthetic wastewater was found to be 5.9 , which is its own pH value. As a result, *Fraxinus excelsior*, a cheap and abundant biosorbent, can be used as an effective biosorbent for the removal of methylene blue from synthetic wastewater.

Keywords: Adsorption, Methyleneblue, Forestwastes, *Fraxinus excelsior*

Effects of Some Insecticide on Eggs of Tomato Leaf Miner, *Tuta absoluta* (Meyrick) (Lepidoptera:Gelechiidae)

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Abstract

This study was conducted to determine the toxic effects on the eggs of *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) using recommended dose of three different insecticides, Spinosad, Indoxacarb and Chlorantraniliprole + Abamectin. Tomato leaves with 2 day old eggs were exposed to recommended dose of insecticides using leaf-dip assay method for 5 second. TritonX-100+water was used as control. The tomato leaves with egg exposed to insecticides put on %1.5 agar. Then they were kept 26±2°C, 60±10% RH and 16L:8D fotoperiod in growht room. Live-dead eggs were counted under stereo microscope after 5 days exposure. As a result, 100% mortality was observed in the eggs exposed to the recommended dose of insecticides.

Keywords: *Tuta absoluta*, spinosad, indoxacarb, chlorantraniliprole+abamectin, egg

Efficacy Of Sometreatments On PVY And PVX Infected Potato Plants

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Abstract

Elimination of PVY and PVX from potato supply is essential for seed potato production. In this study, the efficiency of some combined techniques (chemo- and electrotherapy) in decreasing the infection level of PVY and PVX infected plants was evaluated. Plantlets (cv. Roclas) obtained from PVY and PVX infected material were used in the experiments. Electrotherapy was applied in several variants: the infected plantlets were exposed to 100 mA for 5, 10 and 20 minutes, washed, divided into single node cuttings and multiplied *in vitro*. Chemotherapy was undertaken with ribavirin (RBV) and oseltamivir (OSMV). *Solanum tuberosum* L. plantlets regenerated were removed from the culture medium, acclimated in green house. The survivor plants were indexed (DAS ELISA, Bioreba, Switzerland). The variant leading to highest rates virus elimination and plant regeneration was estimate using the Therapy Efficiency Index (TEI). Distinguished virus elimination rates were obtained for all the material infected, using the most severe variants of electrotherapy (100mA/10minutes; 100mA/20 minutes). The highest value for this percentage were registered in case of material infected with PVX.

Keywords: Potato Virus Y, Potato Virus X, electrotherapy, chemotherapy.

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Comprehensive Analysis Of Coastal Landscape Resources: Quantitative Approach

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Abstract

Coastal landscapes face increasing demands for space and resources that they support. These demands generally conflict with each other and with the potential of landscape systems. Owing to the fact that landscapes of interest on the coast are complex, multifaceted quantitative analysis is highly necessary to understand variations in space and time. These variations may result from natural and/or human-induced processes. Recently completed research project in a coastal region on Turkish Mediterranean coast provided a framework for a comprehensive analysis of coastal landscapes. This paper provides a brief summary of the outcomes from this project. Quantitative analysis procedures were highlighted and discussions were made.

Keywords: Landscapes, coastal zone, Turkey, Mediterranean, quantitative analysis

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The Important Chemical and Physical Properties of Kiwifruit ‘Hayward’ Variety Grown in Ordu Province of Turkey

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Abstract

This research has been carried out with the aim of determining the chemical and physical properties of “Hayward” kiwi grown in the districts of Ordu province (Turkey) in 2015. As a result of the study, from the physical properties at the eating-ripe; fruit weight, width, length, thickness, volume, density, thickness of fruit rind, texture of pulp, rind L value, rind a value, rind b value, pulp L value, pulp a value, pulp b value, fruit juice yield ranged between 77.540 g and 114.893 g, 47.217 mm and 53.357 mm, 59.970 mm and 69.497 mm, 43.467 mm and 48.377 mm, 77.500 ml and 110.417 ml, 0.990 g/ml and 1.063 g/ml, 0.777 mm and 1.333 mm, 0.987 kg/cm² and 1.500 kg/cm², 42.423 and 45.393, 1.970 and 3.663, 25.180 and 28.950, 51.317 and 56.813, -16.930 and -14.127, 28.050 and 32.580, 63.570% and 69.283%, respectively. The chemical properties; total soluble solids ranged between 10.433% and 12.150%, pH 3.317 and 3.460, TA 1.170% and 1.387%, vitamin C 29.000 mg/100g and 56.833 mg/100g, total dry matter 14.157% and 15.767%, glucose concentration 36.140 g/l and 47.177 g/l, fructose concentration 37.443 g/l and 49.647 g/l, sucrose concentration 10.547 g/l and 18.150 g/l, total phenolic matter 565.000 mg GAE/l and 768.667 mg GAE/l, ash content 7.030% and 11.277%, phosphorus content 49.333 mg/kg and 119.333 mg/kg, potassium content 2166.330 mg/kg and 2264.330 mg/kg, sodium content 13.167 mg/kg and 20.233 mg/kg, calcium content 64.333 mg/kg and 250.333 mg/kg, magnesium content 13.333 mg/kg and 103.333 mg/kg. It has been identified that the fruits grown in Gülyalı district have way better properties in terms of quality compared with other districts.

Keywords: Kiwifruit, Hayward, Chemical, Physical, Ordu, Turkey

The Efficient Role of Geographical Information Systems (GIS) in Water Resources Management

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Abstract

The management of water resources and the efficient planning of future projections is crucial in meeting the water needs of the growing population. Geographical Information Systems, which have been used effectively in many areas in recent years, provide infrastructure support to many organizations in data management. Spatial analysis of water resources and the provision of sustainable investments for future projections will only be possible with effective and strategic management of resources. GIS technology is one of the most effective and acclaimed methods for spatial analysis of data and planning as planning. Errors to be made during the planning phase will create an environment for major problems, especially in the management of water resources. It is inevitable that basin-based studies should be supported especially geographical information technologies and that water resources management should be kept effectively in a managerial sense by keeping all data in a database. It is not possible to establish effective planning in well-managed water strategies. The Turkish Statistical Institute predicts that for 2030 year, our population will be 100 million. In this case, it can be said that the amount of usable water per capita in 2030 will be around $1.120 \text{ m}^3 \text{ year}^{-1}$. It is possible to predict the impacts of factors such as the current growth rate, changes in water consumption habits, and the pressures on water resources. In addition, all these estimates could be the case if the available resources are transferred without destruction after 20 years. For this reason, in order to leave healthy and sufficient water to the future generations of Turkey, it is necessary to keep the resources very well and to use it reasonably. At present there is an effective management system for the effective management and planning of all water resources in the Geographic Information Systems environment with the provision of climate water database established within the Ministry of Forestry and Water Affairs of Turkey. It would be inevitable that this database could be contributed to the strategic management of planning for future generations in terms of water resources in the GIS environment.

Keywords: Water resources, Spatial Management, Geographic Information Systems, Turkey



Comparison of Contrasting Potato Cultivars at The Transcriptomic Level Indicates Key Factors for Different Tolerance Drought Stress

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Abstract

Potato (*Solanum tuberosum L.*) is one of the crops growing and using for feed in many countries. The crop is primarily developing in cool temperature climates with adequate sunlight, mild day temperature and cold nights. Potato is a plant with high water use efficiency but because of the fibrous root system, it is less tolerant to the drought stress. Drought stress causes direct reduction in tuber yield in the production of potato plantation areas where rainfall is insufficient; therefore potato should be watered frequently. Understanding the mechanisms of drought stress tolerance in potato by molecular researches will allow the formation of pre-accumulated knowledge that eventually can be used in breeding programs. Increasing and decreasing the expression of genes in drought conditions are providing important source of information that we need to analyze by transcriptomic method and in the larger stage we can use for developing marker or transgenic approaches. Overall using breeding approach to increase the tolerance of potato will take a long times as well as applying drought practices. The aim is to compare drought tolerant and sensitive potato varieties in leaf transcriptome level and to identify metabolic differences between them. Identifying candidate genes that are nominated to differentiate drought tolerant and sensitive potato varieties both after and before drought stress provides information to examine the importance and appropriateness of transcriptome data in selection along with breeding programs for agriculturally crucial plants.

Keywords: Drought stress, potato, RNA-Seq

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— Cappadocia/Turkey —

15-17 May 2017

Use of SLEUTH Model for Predicting Urban Development in an Agricultural Landscape

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Abstract

Urban development is one of the most important phenomena that threaten prime agriculture areas. Current rates of urbanization are unprecedented all around the world. Many populated urban centers have expanded over fertile agricultural areas in the last decades. Observed urbanization trends suggest that negative implications of urbanization, such as losses of agricultural areas will increase in the future. Many quantitative models have been developed for predicting future state of urban development. As these models create georeferenced spatial outputs, impact of urbanization on other land uses such as agriculture may be predicted. SLEUTH is one of these models. The SLEUTH model (slope, landuse, exclusion, urban extent, transportation and hillshade), formerly called the Clarke Cellular Automaton Urban Growth Model, integrates 2 sub-models, the Urban Growth Model (UGM) and the Deltatron Land Use/Land Cover Model (DLM). Recently completed research project supported by TUBITAK (Grant no: 111Y253) included use of SLEUTH model to predict future state of built-up development along the west coast of the city of Mersin (Turkey). This paper presents a brief outline of the procedures employed and it provides main outputs from SLEUTH model. In this respect, impact of the future state of building development on agriculture areas was analyzed and discussed.

Keywords:SLEUTH, urban development, agriculture, Mediterranean coast

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An Appreciation of *Astragalus* Species in Forest, Agriculture and Food Sciences

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Abstract

It is predicted that increasing effect of global climatic variability cause vital agricultural, ecologic and socioeconomic consequences. Turkey is one of the countries at risk such as reduction of water resources, decreasing rainfall ratio, forest fires, and desertification and drought troubles. As a result of all these issues, erosion is an inevitable end except for arable agriculture fields. The *Astragalus* genus is native to temperate regions of the [northern hemisphere](#) (especially Afghanistan, Iran, Iraq, Lebanon, Russia, Syria, Turkey, and North America). *Astragalus* genus is also known as ‘Geven’ in Turkey. *Astragalus* species are resistant against cold or hot weather conditions, drought and grazing, are generally annual plants. They are commonly utilized for preventing erosion, production of animal feeds, bio-fuel and food additives like hydrocolloids besides some other cosmetic and medicinal purposes. Sticky resin of plant body got used for its sedative and preventive effect in alternative or traditional medicine for many years. Moreover, the resin can be used an emulsifier and stabilizer agent in food, textile and pharma industry. The hydrocolloid extracted from *Astragalus* known as ‘Kitre’ in our country. Particularly, *A. tragacanthus* and *A. gossypinus* are the main sources of tragacanth gum. It is a complex mixture of acidic polysaccharides, mostly present as calcium, magnesium and potassium salts. Chemically, these complex gains to *Astragalus* varieties many bioactive features. It is widely used in salad dressings, sauces, dairy products and bakery products in food sector. It should be reminded regional and national conservation of fundamental plant species. The aim of this essay was to gather the research about the assessment of *Astragalus* plant and its extract in vivo and in vitro conditions.

Keywords: *Astragalus*, Kitre, Tragacanth Gum

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Breeding by Selection of Wild Rose Hip Genotypes (Rosaspp.) Grown in Akıncılar County (Sivas Province, Turkey)

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Abstract

This study aimed to breeding by selection of promising wild rose hip genotypes grown in Akıncılar County (Sivas Province, Turkey) during 2008 and 2009. In the first year of the study nine promising genotypes were selected among 55 wild rose hip genotypes from point of view of selection criteria. In these cond year, phenological, morphological and pomological characteristics of nine promising genotypes were determined. Some important fruit characteristics of genotypes were evaluated in the study; the average fruit weights were between 1.65 g (SVS-48)-2.78 g (SVS-53); fruit flesh ratios were between 63.89 % (SVS-09)-75.01 % (SVS-10); the vitamin C contents were between 438.64 mg/100 g (SVS-41)-766.07 mg/100 g (SVS-14); the fruit flesh ratios were between 56.86 % (SVS-09)-76.49 % (SVS-10); the total dry matter contents were between 34.61 % (SVS-13)-45.52 % (SVS-09) and the soluble solid contents were between 23.27 % (SVS-41)-33.91 % (SVS-13).

Keywords: Rosaspp., Rosehip, selection, breeding, Turkey



The Investigation of The Biological Control of *Alternaria alternata*(Fr.) Keissl. (1912)

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Abstract

Alternaria alternata, which has a wide host environment, is an important fungal pathogen causing losses in yield in agricultural fields. The chemicals used to control this disease factor are directly toxic to useful microorganisms living in soil, especially to worms and blue-green algae. For this reason, new strategies are needed to control this factor. With the awareness on the negative effects of the chemicals used in the fight against diseases and with the increasing awareness on environmental issues, alternative methods were sought in the past; and in this context, studies were conducted to find new methods in which fungi and bacteria were used in the biological control against plant pathogens, and successful results were reported. Two isolates were obtained from strawberry and cucumber purchased from greengrocer and were defined as *Alternaria alternata*. These two isolates were passed through pathogenicity processes, and the use of the biological control was investigated in this study. For this purpose, the efficiency of 2 fungal isolates (ET 4, ET 14), which were defined molecularly as *Trichoderma harzianum*Rifai in a previous study and which was used successfully in biological control against many plant pathogen fungal factors, and the 13 bacteria isolates against *A. alternata* was examined in *in vitro* conditions in Potatoes Dextrose Agar (PDA) in this study. In this study, the growth diameters of the disease factor fungus isolates were measured, and it was determined that *Bacillus pumilus* TV 67C (87.63%-65.89%), *Bacillus subtilis* TV 6F (77.61%-63.11%) and *Bacillus megaterium* TV 87A (72.93%-68.87%) bacteria isolates were determined to be the most influential isolates against this disease factor.

Keywords:*Alternaria alternata*,bacteria,biological control,*Trichoderma harzianum*



Effects of Heat Stress on Dairy Cattle

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Abstract

In the design of dairy cattle shelters, behavior of the animals, climatic environmental factors and herd management have a significant impact. The most important function of dairy cattle barns to protect animals from unfavorable environmental conditions and to increase productivity will be achieved per animal providing with adequate housing environment for them. The most three important factors affecting yield in livestock raising are genetic, nutrition and environmental conditions, respectively. These three factors in order to achieve the highest level efficiency from the animals should be handled at the same time. Stress factors in dairy cattle are composed of structural, climatical and social environments. The stress resulting from the climatic environmental conditions occur due to changes of climatic values in the environment in which hosted of the animals. The most important parameter affecting the productivity of dairy cattle is climatical factors. Climatic environmental conditions consist of temperature, air velocity, relative humidity, solar radiation and light etc. parameters. The temperatures within the climatic environmental conditions are more important with regards to can exhibit normal behavior of the animals and their ability to sustain physiological activities. In dairy cattle, associated with rise above of optimum temperature zone of temperature will be broken heat balance of the body and the animals will enter the heat stress if this excess heat does not take away the of body. Shortly after the start of heat stress, declines will occur in milk yield and animal losses will be inevitable if necessary precautions are not taken. In this review, studies conducted related to in dairy cattle breeding how it should be of climatic environmental conditions suitable to animal behavior and effects on dairy cattle of heat stress were summarized.

Keywords: Dairy cattle, heat stress, temperature, behavior, Temperature-Humidity Index (THI)

A New Approach in Management against Plant Fungal Disease: Host Induced Gene Silencing

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Abstract

Plant pathogenic fungi may cause crop losses that affect the world economy. Although one of the most effective ways to combat plant pathogens is a chemical control, alternative methods have become necessity as a result of environmental pollution and residue problems caused by pesticides used in agriculture. The mechanism of RNA interference (RNAi) has been developed to completely prevent or decrease the production of protein which is an expression of a specific gene. Due to the degeneracy of mRNA chain which is complementary of double-stranded RNA (dsRNA) entered into cells is prevented the production of protein. RNA silencing is very important for many organisms and microorganisms. This natural phenomenon can be exploited to control agronomically relevant plant diseases, based on the demonstration that *in vitro* feeding of dsRNA can signal Post transcriptional gene silencing (one of the RNA silencing methods) of target genes in various plant pests and pathogens, such as insects, nematodes and fungi. In other words, as well as determining a function of specific gene and developing of new plant various, RNA silencing was also begun to use for developing resistant plant varieties against biotic and abiotic factors by the suppression of gene expression. This biotechnological method, termed host-induced gene silencing (HIGS), has emerged as a promising alternative in plant protection because it combines high selectivity for the target organism with minimal side effects, as compared with chemical treatments. In recent years, the significant developments related to the use of HIGS in management against plant pathogenic fungi (*Puccinia striiformis* f.sp. *tritici*, *Blumeriagraminis*, *Fusarium verticillioides* etc.) were obtained. In this review, it is mentioned from the mechanism of HIGS and studies related to the use against plant pathogenic fungi.

Keywords: dsRNA, HIGS, mRNA, PTGS.

An Approach to Dormancy Breaking Techniques of Crop Seeds

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Abstract

The first and significant stage of crop production is seed sowing, germination and emergence. As it is well known, every seed sown in to the soil may not be germinate. The reason is that “seed dormancy”. Seed dormancy has been defined as the failure of an intact, viable seed to complete germination stage to optimize its germination over time, dormancy also prevent pre-harvest germination. In another sense, seed dormancy namely resting period is the internal or innate inhibition of germination of otherwise normal or viable seed even its germination. There are several types of dormancy caused by tough seed coat, embryo or various inhibitors. In case of dormancy failures, pre-treatments should be done to the seeds prior to sowing. Different techniques of breaking seed dormancy means improving seed germination and consequently the emergence rate and emergence speed of these seeds. This treatment also increases the quality characteristics of the seedling. Techniques to get over dormancy are various scarification methods (mechanical or acid treatment) and hot water application. The other techniques to break dormancy are seed priming, precooling, preheating, hormonal treatment and leaching of inhibitors.

Key words: seed, dormancy, breaking methods, germination.

The Effect Of Pomegranate Peel, *Yucca* Saponin, And *Tyhme* Oil On Gaseous Emissions Of Manure (Methane, Carbon Dioxide And Nitrous Oxide) In Awassi Sheep Fed In Normal Farming Condition

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Abstract

This experiment was conducted to evaluate the effects of pomegranate peel (PP), *Yucca* powder extract (YE), and *Thyme* oil (TO) on emissions of methane, carbon dioxide and nitrous oxide in manure and performance of dairy Awassi ewes. Sixteen Awassi dairy sheep with 1-2 month pregnant and average weight of 50.4 ± 1.02 kg were randomly assigned to 4 treatments: 1) control, 2) *Yucca* powder (0.1%), 3) PP, 4) *Thyme* oil (0.1%). Within each treatment, 4 sheep were randomly assigned to groups. For PP production, sun-dried pomegranate by-products were milled to be 3-5 cm in particle size. Then, in group 2; PP was delivered to be a certain part of forage source with a ratio of 40: 60 % (PP and alfalfa hay). The experiment was performed in four 17-day periods consisting of 10 days for adaptation and 7 days for recording. Manure samples for gaseous emissions were collected after leaving the sheep one day on canvas. The fresh manure was left in the bottle with barometer for 2 h to measure total gas production and gas samples for CH₄, N₂O and CO₂ recognition were taken to syringes. *In vivo* digestibility and nitrogen balance were determined with 16 sheep fed experimental diets and total faecal collections were performed on all animals. Feed intake and changes in body weight of sheep were not affected and feed conversion ratio did not change in all groups at the end of trial. Some manure components (dry matter, total N, ADF and NDF) were affected by the group's ratio except ash and pH. The amounts of manure and total gases based manure origin and the contents of CH₄ and CO₂ gases located as ppm/ml in manure were similar in all groups. The content of N₂O was higher in the control group. Supporting the rations with tannin, saponin and *Thyme* oil reduced manure N₂O content. Results of this study showed that under our experimental conditions, Supporting with PP tannin (15%) had no negative effect on the sheep and further experiments should be done on the rations containing higher PP levels.

Keywords: Greenhouse gases, *in vivo* digestion, Manure output, Livestock waste



P-Lactoglobulin Gene Polymorphism of Native Black Sheep in Mersin Province.

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Abstract

In this study, it was aimed to determine P-Lactoglobulin (P-LG) gene polymorphism of Black sheep in Mersin region. P-LG is the major whey protein in ruminant milk. The P-LG encoding gene has been sequenced in sheep. P-LG has been mapped to Chromosome 3 in sheep. DNA isolation was performed using genomic DNA isolation kit from 36 sheep without kinship. PCR-RFLP analysis was performed of the sheep P-lactoglobulin (P-LG) gene. The PCR products of the P-LG gene were obtained for all sheep with a length of 120 bp. The PCR products were cut with the *RsaI* enzyme. For P-LG genetic variants, gene and genotype frequencies were determined by direct counting method. The Hardy-Weinberg equilibrium is determined by the Chi-square (χ^2) test. PopGene 3.2 package program is used for calculations. Bands with lengths of 66, 37, 17 bp (AA), 103, 66, 37, 17 bp (AB), 103, 17 bp (BB) were detected as a result of cleavage of the P-LG gene by the enzyme of the 120 bp PCR product. P-LG^a and P-LG^B allele frequencies were; 0.542 and 0.458, P-LG^{AA}, P-LG^{AB} and P-LG^{bb} genotype frequencies were; 0.293, 0.472 and 0.222, respectively. P-LG gene was also determined that the population was related to Hardy-Weinberg.

Keywords: Native Black sheep, P-Lactoglobulin, polymorphism

Evaluation of some Chickpea Line and Cultivars for Yield and Yield Components

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Abstract

This study was carried out under Kırklareli-Lüleburgaz conditions in 2015-2016 cropping season using 36 chickpea lines and 24 commercial cultivars (Aydın 92, Azkan, Menemen 92, Aksu, İzmir 92, Aziziye 94, Çağatay, Eser 87, Gülümser, Yaşa 05, Akçin 91, İnci, TAEK-Sağel, Er 99, Akça, Diyar 95, Damla 89, Gökçe, Uzunlu 99, Canitez 87, Dikbaşı, Sarı 98, Hisar and Cevdetbey 98) and was arranged in an augmented experiment design. In the research, flowering time (FT), physiological maturity (PM), plant height (PH), first pod height (FPH), branch number (BN), pod number (PN), grain number (GN), 100 seed weight (100-SW) and grain yield (GY) were investigated. The genotypes were found variable for all investigated traits. The average grain yield was 107.8 kg/da in commercial cultivars while 150.3 kg/da in lines. The highest grain yield among cultivars was obtained from Azkan cv. with 160 kg/da while Akçin-91 was the lowest with 56.4 kg/da. The line SMN 13 had the highest GY (254.2 kg/da) and was 58% higher than the Azkan cv. and was found hopeful for the region. The highest 100-SW was obtained from SMN 02 (45.3 g), the highest GN was obtained from SMN 13 (45.3 grains), the highest PN was obtained from SMN 17 (47.3 pods) and the highest BN was obtained from SMN 82 (15.7 numbers). According to the biplot analysis PC1 and PC1 (34.9 and 22%, respectively) were explained the 56.9% of the variation. First pod height, PH, BN, 100-SW, GN, PN and GY were positive traits while FT and PM was the negative traits. Çağatay, Er-99, Azkan, Eser-87, Aziziye-94, Akça, SMN 60 and Aksu were the most stable genotypes while, Aydın-92, Cevdetbey 98 and Diyar-95 has higher values for PH, FPH and BN. SMN 13 and SMN 17 genotypes had higher GY, PN and GN values.

Keywords: Chickpea, Line, Cultivar, Yield, Yield components



A Research on the Effect of Global Trends in Turkish Kitchen Furniture Sector

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Abstract

In this study, the effects of trends on the production and projecting studies in the kitchen furniture sector are examined. In this context, the survey results of the kitchen furniture manufacturers in Turkey have been evaluated within the framework of global trends. The level of knowledge and difficulties of catching up and implementing the development trends in the world kitchen furniture sector of Turkey for kitchen furniture industry which has been seen as having a structure equivalent to world standards as the level of material and technological development has been determined on 4 criteria (consumer demand, housing plan, technology inadequacy, material inadequacy). According to the findings in this framework, it was found that the consumer demand was the most influential (45.4%) in capturing and implementing the trends of the enterprises. According to the evaluation results of the kitchen furniture projects implemented by the sector enterprises in the last five years, it is determined (41.6%) that they mostly work with models with one-lid view in the cabinet door applications of the kitchen projects. As a result, it is seen that the world trends in the kitchen furniture area reflect the influence and reflections of the Turkish kitchen furniture sector directly on the cabinet door models and color preferences of the kitchen units.

Keywords: Kitchen furniture trends, Turkish kitchen furniture sector, Kitchen furniture, Colour preferences in kitchen furniture.

Impact of Nonthermal Treatments on Bioaccessibility of Phenolic Compounds in Food Matrix

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Abstract

Novel emerging nonthermal techniques that are alternatives to the traditional heat treatments are topical for a long time in food industry. These nonthermal techniques are high pressure processing (HPP), high hydrostatic pressure (HHP), high pressure homogenization processing (HPHP), ultrasound, pulsed electric fields (PEF), high intensity pulsed electric fields (HIPEF) and pulsed light, high voltage electrical discharges (HVED). Phenolic compounds have several health promoting effects and have been reported to exhibit antioxidative, anticarcinogenic, anti-inflammatory, antiaggregatory and vasodilating effects. Bioaccessibility, which is defined as the relative amounts of nutrients or phytochemicals released from a complex food matrix in the lumen of the gastrointestinal tract and therefore available for absorption into the body, is the first step for bioavailability. Nonthermal treatments affect the amount of phenolic compounds and bioaccessibility of phenolic compounds in food matrix. There are limited studies investigating effects of nonthermal treatments on bioaccessibility of phenolic compounds. Studies showed that HPP increased bioaccessibility of total flavonoids and some phenolic compounds such as hesperidin, rutin, etc. HPP generally increased bioaccessibility of phenolics, but there also some studies that HPP did not change or decreased bioaccessibility of phenolics. Ultrasound mostly increased bioaccessibility of phenolic compounds, excluding one study that bioaccessibility of phenolic compounds did not change. HVED increased or decreased bioaccessibility of phenolic compounds depending on energy input. PEF and HIPEF have different impacts on bioaccessibility of phenolics depending on process conditions and food matrix. As nonthermal treatments can induce significant changes in food structure, it can influence the bioaccessibility of phenolic compounds that are intracellularly located. Consequently, bioaccessibility of phenolic compounds is highly dependent on composition of food matrix, food structure, type of nonthermal technique, processing conditions. This study aims to review the effects of nonthermal treatments on both the amount and bioaccessibility of phenolic compounds in different food matrixes.

Keywords: nonthermal, phenolic compounds, bioaccessibility, food matrix

The Determination of the Resistance to Abrasion and Scratching of Some Varnishes Applied on Sapele Wood

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Abstract

In this study, it was aimed to determine the abrasion and scratching resistance of polyurethane, single component water-based, double component water-based and synthetic varnish applied to the surfaces of specimens prepared in the section of radial and tangential of Sapele wood (*Entandrophragma cylindricum*). Bonding abrasion resistance and scratch resistance of the varnish layer were determined in accordance with TS EN 15185 and TS EN 15186 standards respectively. According to the test results, the effect of varnish types on abrasion and scratching resistance are statistically significant while the effect of section direction is insignificant. According to the results of the study, the highest abrasion resistance was obtained in polyurethane varnish (261.3 cycles) while the lowest was found in synthetic varnish (194.3 cycles). The highest scratching resistance was obtained in polyurethane varnish (1.60 N) while the lowest was found in synthetic varnish (0.90 N). It has been determined that there is no statistical significance between single component water-based varnish and double component water-based varnish in terms of abrasion and scratching resistance.

Keywords: Abrasion resistance, Scratching resistance, Varnish layer, Sapele wood

Investigation Of Some Quality Values Of Elazığ's Local Grapes

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Abstract

In this study, In addition to Boğazkere and Öküzgözü grape varieties, Elazığ's local grapes are Köse, Yagbi, Kesbir, Red grape, Silfoni, Beyaz Sıralık grape, Ağın Beyazı which are the other names of Anatolia's wonderful astringent taste, have been used. Grape samples are studied for physical quality that are bunch features, berry characteristics and their unfermented grape-juice's chemical qualities parameters (°Brix, TA, pH, maturation index).

Physical properties of bunch weight, The highest value is Ağın Beyazı (725.9 gr), the lowest value is Red grapes (191.3 gr). The highest value for grain weight was determined as Okuzgozu (6.7 gr) The lowest value is Red grape (2.46 gr).

The amount of dry matter caused by the chemical quality parameters in the grapes, Kose grape varieties was found 25%, While It is highest value, Silfoni is lowest value as 13.2%. Okuzgozu's pH is 4.25 which is highest level from all samples, while Ağın Beyazı; 3.39. titration acidity values were change between Okuzgozu (1.02 g l⁻¹) and Kesbir (5.32 g l⁻¹).

Keywords: Elazığ, grape, Okuzgozu, Bogazkere, Ağın Beyazı,

Isolation of the Motile Aeromonas in Food and Investigation of Antibiotic Susceptibilities

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Abstract

Motile *Aeromonas* spp. exist in the environment especially in drinking water, fresh and brackish water and in the flora of human and animal digestive systems. The reason of defining the motile *Aeromonas* spp. as food pathogens is that they exist widely in the environment. Since they have psychrophilic structures, they can reproduce in the foods kept at 4°C, and pose a potential danger for human. The major contamination source of the infections depending on motile *Aeromonas* is the water for humans and animals. This study was conducted to determine the existence of motile *Aeromonas* spp. in animal source foods and water by a cultural method and to reveal the antibiotic susceptibilities of the isolates. In this study, a total of 224 food samples such as fish, chicken, fishery products, milk, meat and water supplied from points of sale like market and bazaar in and around Izmir have been examined as experiment materials. 87 of 224 foods (meat, chicken, fish, fishery products, milk and water) have been found to include motile *Aeromonas* spp. According to the study, 51 (22.76%) of them were identified as *A. hydrophila*, 26 (11.6%) of them as *A. caviae* and 10 (4.6%) of them as *A. sobria*. In the present study, 87 *Aeromonas* strains were determined by the disc diffusion method using 16 different antibiotic discs. All *Aeromonas* spp. isolates have been found to be susceptible to imipenem and ciprofloxacin.

Keywords: Motile *Aeromonas* spp. isolation, animal source foods, antibiotic susceptibility

The Effect Of Storage On Physicochemical Characteristics Of Traditional Winter Yoghurt

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Abstract

The winter yoghurt produced widely in the central Anatolia was traditionally produced in Kıraman village more of Karaman. Four different yoghurt samples were produced by using mixture of sheep or goat milks and during production and shelf life, their dry matter, fat, pH, titratable acidity, water activity, colour properties (Hunter L^* , a^* , and b^* values), were investigated. Some chemical and physical analyses were conducted to determine the effect of storage time and type of milk in winter yoghurt sample in the days of 3th, 30th, 60th, 90th. According to the findings of the study, average values of dry matter in winter yoghurt samples were determined as follows at samples of A (only sheep's milk-Normal), B (60% sheep milk + 40% goat milk) , C (90% sheep milk + 10% goat milk) and D (only sheep's milk-Burnt milk), 15.89-18.37%, 15.87-16.88%, 14.70-17.44% and 15.17-15.43% respectively. Average values of fat were determined as follows at samples of A, B, C and D 6.21-6.55%, 5.65-6.00%, 6.85-7.75%, 5.95-6.85% respectively. Average values of protein were determined as follows 4.21-4.85%, 3.95-4.52%, 3.72-4.49%, 3.65-4.46% respectively. Average values of titratable acidity were determined as follows 1.91-2.21, 2.13-2.22, 2.08-2.26, 1.93-2.29 respectively. Average values of pH were determined as follows 3.78-3.82, 3.74-3.76, 3.75-3.78, 3.74-3.90 respectively. Average values of ash were determined as follows 0.97-1.04%, 1.00-1.06%, 0.99-1.06%, 1.02-1.10% respectively. Average values of water activity were determined as follows 0.93-0.97, 0.94-0.98, 0.96-0.98, 0.96-0.98 respectively. In this study, produced in limited quantities and development of technology in the production of winter yoghurt rapidly diminishing, different proportions of sheep and goat milk production is a mixture of physicochemical this storage period properties and continuous production of this product is aimed to gain.

Keywords: Winter yoghurt; storage; traditional yogurt; physicochemical properties.

**Inheritance of Fire Blight Susceptibility and Fruit Characteristics of some
Pear (*Pyrus communis* L.) Hybridization Combinations in a Breeding
programme for Fire Blight Resistance**

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Abstract

Fire blight is a disease that is difficult to control and has a very high destructive effect. Control measures are taken to prevent the disease, although fire blight is common in every region where pear cultivation is made. The susceptibility of the commercial pears to the disease threatens pear cultivation. Hybridization is one of the familiar methods of breeding to develop new varieties that resistant to disease. In this study, some hybridization combinations. Differences between the susceptibility values of the hybrid individuals of these combinations to *E. amylovora* were determined. In addition, Fruits that derive from these hybridization combinations were evaluated in terms of fruit characteristics such as eating quality, fruit attractiveness, fruit size, length/diameter, stone cell status of fruit, fruit firmness, rustiness, soluble solids content, which are detected by examining the fruit properties, have been evaluated with the 2-year data.

Keywords: breeding, *Erwinia amylovora* resistance, fire blight, *Pyrus communis* L.

Effects of caffeine on human health

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Abstract

Caffeine is one of the most broadly consumed psychoactive material all over the world⁽¹⁾. Historically, tea and soda are the most oldest beverages including caffeine. Recently, variation of food production, which comprise caffeine, has increased such as energy drinks, specialist coffee, potato chips, gum and candy bar⁽⁸⁾. Therefore, the consumption of caffeine-containing drinks has raised remarkably throughout the world. Indeed, in recent years, the consumption of caffeine is higher than any other drug. Nearly 80% of the world's population consumes caffeine-containing products ever day, with tea (12%), soft drink (16%) and coffee (%71) being the most widely consumed^(8,9). There is an significant increase in caffeine consumption through last century with developing technology and innovative evolution in food industry. Actually, the rising demanding of the caffeine containing productions has brought along with its likely effects on human health. The present study reviewed the effects of caffeine consumption on human healthy in terms of cardiovascular system, anxiety, memory, sleep, depression and aggression.

Keywords: Caffeine, Human health, Memory, Sleep,

The Comparison of Nitrate Analysis Methods in Grap Leaves

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Abstract

This study was carried out to compare different methods of plant nitrate (NO₃) analyses. Grape leaves were used as material. For this purpose, leaf samples were taken from 24 vineyards in color change period from Salihli, Alaşehir and Turgutlu provinces. Pure water extractable nitrate determinations were carried out with spectrophotometer, HPLC and ion meter. Significant differences and correlations were found among methods used in this study. NO₃-N concentration was determined in HPLC (Y2) between 48,4 and 130,3 mg kg⁻¹, with ion meter (Y4) between 60,2 and 94,5 mg kg⁻¹ and with spectrophotometer (Y1 and Y3) it was measured between 30,4 and 150,4 mg kg⁻¹. The highest correlation among methods was found between the 1st extraction method (Y1) and the 2nd extraction method (Y2); the lowest correlation was found between the 1st extraction method (Y1) and the 4th extraction method (Y4) as $r=0,926^{**}$ and $r=0,541^{**}$ respectively.

Keywords: Grape, leaf blade, methods

Isolation, Molecular Characterization and Assessment of Probiotic Potency of the Yeasts from various Dairy Products

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Abstract

Probiotics are known as live microorganisms that beneficially affect the host via providing healthy microbial intestinal balance. Owing to metabolites they produce, probiotics have a considerable potential for preventive and therapeutic applications in gastrointestinal diseases. In order to be approved as probiotic, microorganisms should possess some features such as (i) having generally-recognized-as-safe (GRAS) status, (ii) tolerance to acidic conditions of stomach, (iii) tolerance to conjugated bile acids, (iv) antagonistic activity against pathogenic microorganisms using several mechanisms like decreasing redox potential or production of inhibitory primary metabolites, (v) antibiotic resistance to maintain healthy intestinal microbiota against any antibiotic use, etc. Although low pH of the stomach is destructive to most of the microorganisms, this pH value gradually increases towards the end of gastrointestinal tract. Contrary to popular belief, most yeasts can grow at pH 3.0 and even lower. In addition to this, probiotic yeasts as in the case of *Saccharomyces boulardii* may possess natural resistance to antibacterial antibiotics thereby remaining their viability and probiotic properties intact. Considering the presence of yeasts as an integral part of the microflora of many dairy related products, new yeast strains which may serve as dietary adjuncts should be isolated. Thus, in this study, fifty-one yeast isolates with different colony morphology were obtained from various dairy products including cheese, kefir, milk, yogurt, koumiss, etc. Antibiotic resistance towards five antibiotics (streptomycin, tetracycline, chloramphenicol, erythromycin, and gentamicin), bile resistance (0.5%, 0.6%, 1%,) and tolerance to low (2.5-4.0) and high pH (9.0-9.5) values were determined. Antagonistic activity against seven pathogenic microorganisms consisting of five bacteria (*Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella typhimurium*) and two yeast species (*Candida albicans*, *Candida tropicalis*) were also evaluated. Molecular identification of the yeast strains with probiotic potency was carried out based on sequence analysis of D1/D2 domain of 26S rDNA regions. *Clavispora lusitaniae*, *Wickerhamomyces anomalus*, *Kluyveromyces marxianus*, and *Candida zeylanoides* were among the species identified.

Keywords: Probiotic, yeast, isolation, 26S rDNA, dairy products

Consumed as Food Edible Wild Plants Some of the Aegean Region, Consumption Method and Functional Properties

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Abstract

The consumption of edible wild plants has traditionally played an important role in Turkey. Aegean region; It is the place where wild plants are consumed the most as food in Turkey. The main weeds consumed as food in the Aegean region are *Foeniculum vulgare*, *Malva sylvestris*, *Sinapis arvensis*, *Raphanus raphanistrum*, *Cichorium intybus*, *Urtica dioica*, *Scolymus hispanicus*, *Papaver rhoeas*, *Eremurus spectabilis*, *Onopordum illyricum*, *Tamus communis*, *Tamus cretica*, *Portulaca oleracea*, *Rumex acetosella*, *Asparagus acutifolius* and *henopodium album*. Some of these plants are cooked and others are consumed without being cooked or cooked. or example, *Foeniculum vulgare* and *Malva sylvestris* are cooked; *Papaver rhoeas* and *Onopordum illyricum* are consumed both cooked and uncooked. Edible wild plants can be characterized by the presence of healthy nutrients due to the nutrients and bioactive components they contain. In this review, the edible wild plants consumed in the Aegean Region; Consumption forms, nutrients and functional properties will be given.

Keywords: Edible Wild Plants, Functional Properties, Cooking Method

Evaluation of Woody Plant Taxons in the Bursa Urban Parks in Terms of Xeriscape

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Abstract

Climate change, which is now becoming effective on a global scale, causes water shortage to occur in serious dimensions for all living things. The water shortage brings a limiting effect on the habitats and comfort of all living things, such as human beings, animals and plants. In the coming periods, it is expressed by scientists that the countries in the Mediterranean zone where our country is also located will turn into arid and semi-arid areas due to the water shortage. This has led to the emergence of innovations in the design of green spaces, which are especially important for the comfort of life. One of the important concepts developed in the framework of water shortage in recent years is "Xeriscape" or "Xerophytic Landscape Design". In this study, four urban parks (Reşat Oyal Kültür Park, Soğanlı Botanic Park, Merinos Urban Park, Hüdavendiğar Urban Park) located in Bursa province were evaluated by taking into account the characteristics of the Xeriscape. It has been determined that the woody plant species used in the design of Bursa urban parks in 53 families. 54 taxon in Reşat Oyal Kültür Park, 182 in Soğanlı Botanic Park, 49 in Merinos Urban Park, 76 woody taxon in Hüdavendiğar Urban Park. The woody plant taxons that were found to belong to 53 families were analysed for drought resistance, frost resistance, resistance to temperature, salt, wind and pollution and water consumption.

Keywords: Xeriscape, Urban Park, Woody plants.

Investigation of Heavy Metal Contamination and Microbiological Quality in Turnip Juice in Western Turkey

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Abstract

Turnip juice is red, turbid and sour soft drink which is especially produced in South Anatolia Region and is consumed in large quantities. In our country, turnip that traditional beverage consumed frequently on our tables may contain microbial or chemical risks, depending on the production conditions. This study, 30 turnip juice from different manufacturers analyzed in term of microbiological (total aerobic bacteria, lactic acid bacteria, yeast and mold, coliform bacteria, E. coli and Salmonella spp.), physicochemical (dry matter and pH) and heavy metal (As, Zn, Cd, Sn, Fe, Cr, Cu with ICP OES). As a result, Salmonella not detected turnip juice samples. Level of total aerobic bacteria, lactic acid bacteria, and yeast/mold were found log 3.48- 6.51, 6.00-7.62 and 2.51-6.38 in regular Turnip juice; 3.00-4.48, 5.26-6.79 and 2.48-4.34 in hot Turnip juice respectively. Result of Coliform, E. coli, dry matter and pH were determined not appropriate to TSE 11149 in two samples of regular turnip juice and one sample hot turnip juice. Zn, Sn, Fe, Cr and Cu were determined 0.188-0.692 µg/g, 0.142-0.238 µg/g, 1.038-4.467 µg/g, <LOD-0.021 µg/g and 0.035-0.258 µg/g in regular turnip juice; 0.160-1.506 µg/g, 0.147-0.217 µg/g, 0.623-4.635 µg/g, <LOD-0.025 µg/g and 0.023-0.298 µg/g in hot turnip juice respectively. Cd is not found in all samples. Arsenic was detected only two samples (0.085 µg/g, 1.836 µg/g). Consequently, turnip juice produced non hygienic can show risk for the public health. In the production of turnip juice to minimize the risk of hazards both microbiological and heavy metal must be applied quality management systems such as HACCP, GMP, GHP.

Keywords: turnip juice, heavy metal, microbiology, physico-chemical

Impact Of Dry Periods On Photosynthetic Pigment And Proline Content Of *Pinus Nigra* Subsp. *Pallasiana* Trees In Mixed Afforestation Area

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Abstract

In this study, changes in accumulation of proline and photosynthetic pigments were assessed in Anatolian black pine (*Pinus nigra* Arn. subsp. *pallasiana*) trees during dry period in mixed afforestation area (Isparta-Turkey). The one- year- old needle samples of Anatolian black pine trees were collected in June, August, September and October 2015. The results demonstrated that differences for proline content and photosynthetic pigments except chlorophyll b were significant between sampling dates. The highest chlorophyll a, total chlorophyll (a+b) and carotenoid content was determined in June, but significantly decreased photosynthetic pigments in dry periods. While photosynthetic pigments were similar in August, September and October, the lowest chlorophyll a and total chlorophyll (a+b) were determined in September (dry period). However, the highest proline content was also found in September. This study showed that photosynthetic pigments and proline content in Anatolian black pine trees changes with the sampling dates during dry period.

Keywords: *Pinus nigra*, chlorophyll, photosynthetic pigments, proline, trees



Overall Situation Assessment of Cold Storages Used for Apple Conservation in Isparta Province

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Abstract

Apple, amongst the fruits grown in the world, is the fruit which has the highest number of option in terms of variety and production area and has the most production amount. Apple, in terms of production area and amount, is a fruit grown and traded densely in our country just as in the whole world. When provinces where apples are grown are examined especially in our country, it is demonstrated that the highest amount of apple is grown and traded in Isparta province. As a natural result of Isparta's current apple growing potential, sector of cold storage used for conserving fruits and vegetables has developed. The fact that a great majority of the cold storage businesses used for conserving only fruits and vegetables in our country locates in Isparta province is the most significant indicator of this statement. This study aims to present the general profile of cold storage sector in Isparta region by analyzing its current status in terms of distribution of cold storages used for conserving apples in Isparta region by districts, their capacities, operating statuses, property statuses, credit financing etc. To this end, all of the cold storage businesses operating in Isparta region were included in the scope of the study. Survey study determining the general statuses of cold storages was carried out with the business owners at the available cold storage businesses, and the data obtained were assessed.

Keywords:Isparta, apple, cold storages system

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Enhancement in Fermented Dairy Products

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Abstract

Nutrient enhancement efforts are made especially for the diseases, which are frequently observed and considered as public health problems. The losses in nutritive values of the foods in the course of time during processing and storage are recovered via the nutrient enhancement. Moreover, the nutritive elements that the foods naturally don't include might also be added. Nutrient enhancement is applied in many domains. Through this practice, many public health problems originating from insufficient nourishment are removed in majority of the society. Furthermore, this implementation had also significant contributions to national economy and human health. But, however, the nutrient enhancement cannot be applied to all sorts of the foods. Insufficient nourishment also causes insufficient economic development, significant health problems, and significant loss in human power. In order to prevent these negative outcomes, the nutrient enhancement studies should be given importance, and the number of studies on this subject should be increased. Maximum attention should be paid in all phases of nutrient enhancement studies from planning to application phases. After the completion of implementations, the monitoring and reassessment activities should be maintained. In this study, the process of fermented dairy products was discussed from the aspect of enhancement in order to recover the losses occurring during processing and storage phases. Moreover, the materials to be selected and the methods to be implemented regarding the fermented dairy products are discussed. Thus, it is aimed to recover the deficiencies via the consumption of fermented dairy products.

Keywords: Fermented dairy products; enhancement.

Determination of Heavy Metals and Pesticide Residue Levels in Water Resources, Agricultural Land and Farm Products in Kırşehir

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Abstract

Pesticide residue and heavy metal presence of fruit and vegetables directly related with irrigation water and soil grown in. For this purpose, water resources, agricultural land and farm products were evaluated to determine the residue levels of heavy metals and pesticide in Kırşehir. Heavy metal (*cadmium-Cd*, *lead-Pb*, and *mercury-Hg*) levels were determined by using ICP-OES. Pesticide residue levels were determined by using GC-MS and LC MS MS. The heavy metal levels (*cadmium-Cd*, *lead-Pb*, and *mercury-Hg*) measured in food, water and soil samples were not detected (<0.01 ppm; <0.1 µg / L). Some pesticide residues (*Cyhalothrin lambda*, *Carbendazim & Benomyl*, *Pyrimethanil*, *Pyriproxyfen*, *Chlorpyrifos*, *Trifloxstrobilin*, *Acetamiprid*, *Fenbutatin Oxide*, *Fenvalerate*, *Esfenvalerate*, *Cypermethrin*, *Imidacloprid*) were found in food samples. As a result, pesticide residues of some farm products were found in at risk in accordance with the human health. "This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: PYO-MÜH.4001.13.002."

Keywords: Water, agricultural land, farm products, heavy metal, pesticide residue



Effects of different irrigation water salinity levels on salt accumulation in plant root zone

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Abstract

It is becoming increasingly difficult to obtain irrigation water from the nature at good quality in agricultural production areas. Mismanagement and incorrect irrigation practices can lead to salinity problems in arid and semi-arid areas, especially where natural drainage conditions are poor. Salts in the water are given to the soil together with irrigation practices and these salts can accumulate in the soil as the water evaporates or is used by plants. In this study, the accumulation of salt in the root zone of tomato plants irrigated with different salinity levels in irrigation water was investigated. The research was carried out in a glasshouse covered greenhouse in the Research and Application Farm of the Faculty of Agriculture of Akdeniz University in Antalya, where the greenhouse farming is common. Irrigation water with four different salinity levels was applied by drip irrigation method in the study. According to the electrical conductivity of irrigation water salinity, the treatments are T1 (control, 0.7 dS/m), T2 (1.5 dS/m), T3 (3.0 dS/m) and T4 (6.0 dS/m). The study was set up in a random block design with three replications. The amounts of water to be applied to the parcels in each irrigation are calculated by using the measurements from the A-Class evaporation pan placed in the greenhouse. In order to evaluate the accumulation of salt in the soil, soil samples were taken at different depths of the plant root zone at the beginning and at the end of the season. These samples were air-dried in laboratory conditions. Saturated pastes were prepared for air-dried soil samples and paste extracts were obtained by classical filtering method. Then, EC readings were realized from these saturated paste extracts. As a result of the research, it was determined that different irrigation water salinity applications were caused different salt accumulations in the soil.

Keywords: Drip irrigation, tomato, electrical conductivity, salt accumulation

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The Effects of Selenium Antioxidative Enzyme Activities of Pumpkin (*Cucurbita Pepo* L.) in Drought Stress

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Abstract

The objective of this study was to investigate the effects of selenium on antioxidative enzyme activities of pumpkin (*Cucurbita pepo* L.) in drought stress conditions. The study was carried out according to factorial experimental design with three replication in a chamber room under controlled conditions. The plastic pots having 2 kg soil were used as growing media with adding the basic fertilization of 250 mg kg⁻¹ N, 32.75 mg kg⁻¹ P and 82.65 mg kg⁻¹ K into each pot. Two different variety of pumpkin were used in this study. The irrigation was made in three different levels of available water at 30 %, 60 % and 100 % rates. The four doses of selenium (0 mg kg⁻¹ Se, 1 mg kg⁻¹ Se, 2 mg kg⁻¹ Se ve 4 mg kg⁻¹ Se) solutions as natrium selenat (Na₂SeO₄) form were applied when seeds were sown. The experiment was ended after seven weeks. The positive effect of selenium application on level of superoksit dismutas (SOD), catalas (CAT) and glutation peroxidas (GHS-Px) and malondialdehyde (MDA) were found generally higher than in first variety than second variety. The drought stress conditions increased all of enzyme activities and malondialdehyde level. The highest enzyme activities were determined as 37.33 unit/ mg protein, 710.00 unit/mg protein, 702.00 unit/mg protein for superoksit dismutas (SOD), catalas (CAT) and glutation peroxidas (GHS-Px), respectively. The highest malondialdehyde (MDA) was 47.00 nmol/g in D2Se3 application.

Keywords: Antioxidative enzyme, Pumpkin (*Cucurbita pepo* L.), Drought stress, Selenium, Soil.



Determination of Hospital Gardens From The Point of Landscape Design: Bursa City Sample

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Abstract

Hospital gardens, one of the urban public outdoors, are located in the active spots of the city and are important as the image of the city. Hospitals will also be effective in quality of patient health and urban environment with their services. A well-designed hospital garden helps patients feel good about themselves as well as shorten the healing process. Hospital gardens should be design comfortably according to the needs and desires of the users, create positive effects in physical and spiritual sense and create a social environment by saving both patients and employees from monotony. In this study, the gardens of private and public hospitals located in the districts of Bursa city center (Osmangazi, Yıldırım, Nilüfer) were discussed in detail, the current situation is assessed and the deficiencies are determined and proposals have been made to ensure effective use.

Keywords: Bursa/Turkey, Hospital garden, Landscape design

Edible City Gardens

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Abstract

Urban spaces have feature of being a versatile space that meets all the needs of people such as life, shelter, protection, rest, entertainment. In addition, cities have become places where the number of people is increasing steadily, technological developments and consequently energy consumption is increasing day by day. Green areas that are in the process of reducing the impact of urban density, It is quite advantageous in terms of application of edible landscape. Edible landscaping; making life easier which grown fruits, vegetables in the season and the aromatic plants are always ready to be found under the hands of the people. The application of edible landscapes creates landscape effect. Besides, it provides opportunity to evaluate healthier products grown by fresh and sustainable agricultural / organic farming methods. In this study, the aesthetic features will be determined and the design examples will be evaluated by giving place to the plant species that constitute the edible landscape.

Keywords : Landscape, Vegetable, City garden

The Impact of Plant and Bacterial Cell Free Extracts on Ammonia and Biogenic Amine Formation in Fermented Sardine Fillets

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Abstract

The influences of cell free extract of *Lactobacillus plantarum*FI8595 and *Pediococcus acidolactici* ATCC 25741 at doses of 8%, alone or in combination with thyme or laurel extracts (0.5%) on ammonia and biogenic amine formation in fermented and vacuum packaged sardine fillets were investigated during 56 day of storage. Ammonia accumulation in fermented fish was low and remained 3.5 mg/100 g in all group during storage. Main amines produced in fermented fish fillets were tyramine, trimethylamine, serotonin and agmatine. The effect of thyme, laurel and cell free extract on biogenic amine accumulation in fish fillets varied depending on specific biogenic amine and storage time. The limit of 5 mg/100 g for histamine in fish products as suggested by FDA were not exceeded in any group, although the highest histamine accumulation was observed in fermented fish fillets treated with cell free extract of *Lb. plantarum* at 14th and 35th days (3.23 and 2.88 mg/100g) and control group at 42th and 49th days (2.38 and 2.32 mg/ 100g). Tyramine was the one of the main amine produced fermented sardine, with ranging values from 7 to 32 mg/100 g. Small amounts of putrescine and cadaverine (<2.5 mg/100 g) were accumulated in fermented fish fillets. Cell free extract of *P. acidolactici* in combination with thyme extract had significant effect on reducing TMA formation in fermented fish samples.

Keywords: Lactic acid bacteria, cell free extract, thyme, laurel, fermented fish, biogenic amines



The Effects of First Thinning Activities on Some Soil Properties in the Beech Stands

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Abstract

This study was carried out to determine the effects of mildly thinning works on some soil properties of beech stands located in the central district of Artvin province. In this context, 5 sample points were taken from thinning beech stand and 5 sample points were taken from control areas that were not thinning in the adjacent areas located at 1400 m altitude. Thinning were held in April 2014, while soil samples were taken in December 2014. 30 soil samples were collected from 10 areas. Some soil characteristics such as texture, pH, organic matter, total nitrogen, bulk density, nitrogen mineralization and microbial respiration were determined. As a result of this study, it was found that the thinning work has significant effects on soil properties such as sand, clay, silt, bulk density and total mineralized nitrogen.

Keywords: Thinning, Beech stand, Nitrogen mineralization, Microbial respiration, Artvin.

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The Hiatus in Global Mean Temperature Increase and What Happened in Büyük Menderes Basin (Western Turkey)?

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Abstract

Within the first decade of 21th century, global average temperature has shown a lower increasing trend than that of the previous decade. However, what has been expected, as also indicated by the model projections, is that the global mean temperature will increase more strongly due to the continuous increase of carbon dioxide concentration in the atmosphere. This slowdown in the increasing rate of global mean temperature with the turn of the century, which is generally called as “warming hiatus” or just “hiatus”, has led to speculations on climate change theory and the model projections. Some studies (for example in China and Spain) have revealed a hiatus in the first decade of 21th century in these regions. A number of hypothesis have been put forward to elucidate this phenomenon. In this paper, this hiatus and the proposed explanations are discussed, and then the evolution of mean, minimum and maximum temperatures in Büyük Menderes Basin (western Turkey) are presented to enlighten whether such a hiatus has existed, using the temperature data from 1969 to 2013. The analysis of temperature evolution, using appropriate graphical and statistical methods (Mann-Kendall test and Sen’s Slope Estimator), has shown that annual mean temperature has increased in the first decade of 21th century with a rate slightly lower than that of previous decade, which seems to confirm the existence of the hiatus for Büyük Menderes basin. On the other hand, while mean annual minimum temperature has increased more strongly, the rate of the maximum temperature increase has declined over the same period.

Keywords: Climate change, Warming hiatus, Büyük Menderes Basin, Turkey



Change of Some Chemical Properties in the Controlled of Burning Young Black Pine Stands in Respect to Time

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Abstract

Forest fires play an important role in the global climate change and influencing some of the physical, chemical and biological properties in the soil. In this study, we investigated that the effect of fire on the some chemical properties in prescribed burning young corsican pine stands soil in respect to time. For this purpose, a total of 6 sample area were selected, three of which were controlled by medium severely burnt young black stands and three from the adjacent unburned areas. Three replicate samples were taken from each experiment area and a total of 6 periods were sampled. Organic matter, pH, lime, phosphorus, potassium, zinc, iron, copper and manganese were analyzed on these samples. As a result of the analyzes, there are a numerical differences between the burned area and control areas in terms of the chemical properties described above but these differences are not statistically significant.

Keywords: Climate change, Prescribed burning, corsican pine, organic matter



Odun Dışı Orman Ürünlerinin Turizm Amaçlı Sürdürülebilir Gıda Ürünü Olarak Kullanılmasına Yönelik Bir Değerlendirme

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Abstract

Forest products such as mineral and biological materials obtained from forest or trees are non-wood forest products (NWFP). NWFP can be also produced from Shell, chip, shrub, stem, log and cones which are occurred during the wood production process. Mushrooms, forest humus and forest covering also places same group. In this study, we aim to investigate how NWFP can be used as a sustainable food product in tourism destination. Also it is thought that NWFP can contribute to product diversification in tourism destinations and it is important in terms of sustainability. In the study, Turkey NWFP inventory created by General Directorate of Forestry were subjected to content analysis. Then, according to obtained raw data, a thematic coding were conducted and three main data were determined such that food, beverage and spices. After then, these have been interpreted. As a result of the study, we suppose that destinations can use NWFP as an alternative tourism product when it wants to get different product also some proposals were offered about how sustainability of existing materials can be used in tourism activities.

Keywords: Non-wood Forest Product, Sustainable Food, Destinations, Tourism.

Estimation of Carbon Storage in Hazelnut Agroforestry and Forest in the Blacksea, Trabzon

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Abstract

Natural forests, forest plantations, agroforestry practices and some other agricultural activities act as a sink for carbon dioxide (CO₂) through photosynthesis and store carbon as biomass. So we aim to find effect of land-use systems in carbon stocks. In this purpose, random sampling design was used to collect samples from Hazelnut (*Corylus avellana*) agroforestry which is one of the most conspicuous agroforestry landscapes and natural forest in Trabzon. There were a total of eight sample plots were collected from Hazelnut agroforestry. The diameter of all trees in each plot with a diameter ≥ 2 cm at dbh and total heights were measured. Average diameter, total height, aboveground biomass, and carbon stock were calculated for each plot. Biomass carbon was significantly higher in the natural forest (68.02Mg/ha) than in the Hazelnut agroforestry (16.89Mg/ha). SOC (Mg/ha) in Hazelnut (*Corylus avellana*) agroforestry and natural forest were 7.70 and 385.85 respectively. Total C in Hazelnut agroforestry, natural forest was 21.30, 258.03 (237.00Mg/ha in Spruce, 248.34Mg/ha in Beech and 288.74 Mg/ha in Beech-Spruce mixed forest) respectively. The higher total C in natural forest as compared to Hazelnut agroforestry shows that; the conversion of natural forest to Hazelnut agroforestry reduces emission of C. In addition, the conversion of arable crop field to Hazelnut agroforestry can sequester large amount of C in the soil as well as in the biomass.

Keywords: Biomass, Carbon Storage, Hazelnut Agroforestry

Green Ultrasound-Assisted Extraction of Carotenoids from Hot Pepper (Capsicum spp.) Based on the Bio-Refinery Concept

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Abstract

The carotenoids are one of the most important groups of natural pigments in fruits and vegetables. In this study, the influence of operating parameters (solid to solvent ratio, temperature, extraction time and ultrasonic power) on the ultrasound-assisted extraction (UAE) of carotenoids from dried hot pepper pomace was investigated. Refined olive oil was applied as a substitute to organic solvents in this green UAE. A high-intensity ultrasonic probe with maximal input power of 200 W and operating frequency of 24 kHz (UP400S, Dr. Hielscher, Germany) equipped with a H14 sonotrode was used for the extraction experiments. Extraction was carried out with three different amplitudes (40%, 60%, 80%) for different extraction periods (5, 10, 15 and 20 min) at different temperatures (30, 40, 50, 60°C). As a result of the experiments; 0.4 g/ml solid-solvent ratio of was selected. Total amount of phenolic content and the antioxidant capacity of extracts were determined by spectroscopic methods. The effects on total carotenoid concentration, total phenolic content and antioxidant capacity of these parameters were examined. Except the temperature at 50°C and 60°C with 80% amplitude, it has been observed that the total carotenoid concentration reached its maximum value at 10th minutes and decreased by the 15 and 20th minutes in each extraction condition. When all extraction conditions were considered, it was observed that the highest total carotenoid concentration was obtained by extraction with 60% amplitude at 40°C for 10 min. extracrion period and the total carotenoid concentration decreased with increasing temperature and amplitude for other extraction conditions. It has been determinated that for all extraction periods and all temperatures, power obtained with 60% amplitude provided greater amount of total phenolic content compared to other amplitude levels. After 10th minute, increase of extraction time had a negative effect on the total phenolic content.

Keywords: hot pepper pomace, ultrasound, extraction, carotenoid, phenolic

The Enrichment of Apple Tissue with Black Carrot Anthocyanins using Ultrasound Assisted Vacuum Impregnation

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Abstract

In recent years, a great growth in the market for minimally processed fruits has been observed which is stimulated largely by consumer demand for fresh, healthy and convenient foods. Food products offering new colors, flavors and textures would be welcome additions to the fresh-cut industry. Vacuum impregnation has become a new method to enrich porous structures of fruits and vegetables with beneficial substances by keeping their fresh physical characteristics. The objective of this study was to enrich apple parenchyma with black carrot anthocyanins using both vacuum and ultrasound-assisted vacuum impregnation. The apples were sliced using apple peeler and slicer. The thickness of apple discs was 6.14 mm. A 5 L isotonic impregnation solution was prepared with mannitol (3.65% w/v), citric acid (3% w/v), calcium-lactate (3% w/v), and black carrot concentrate (0.8% w/v). Treatments were carried out using a special designed 'ultrasound and vacuum system equipment' developed by our laboratory group. The apple slices were firstly immersed into the isotonic solution within the equipment at 211 mmHg vacuum for 3 min. After vacuum, sampling was done during the 30 min of atmospheric restoration period. The same experimental conditions were used for ultrasound assisted trials (35 kHz, 130 W/L). Ultrasound had accelerating effect on anthocyanin and calcium transfer. The total anthocyanin contents of apples were 18.9 and 23.8 mg/100 g (db.) after 30 min restoration period for vacuum and vacuum+ultrasound treatments, respectively. Nonlinear regressions were applied to the time dependent total anthocyanin data using three parameter exponential model and good fits were achieved as expressed by coefficients of determination (0.9968 and 0.9998). Results indicated that restoration time and ultrasound have significant effect on texture, calcium and anthocyanin contents. This study was the first in both describing enrichment of fruit tissue using natural colorant and combined utilization of ultrasound during vacuum impregnation.

Keywords: Vacuum impregnation, Fresh cut apple, Ultrasound, Enrichment, Calcium



Benchmarking Evaluation of Irrigation Performance in Irrigation Districts of Harran Canal

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Abstract

In this study, benchmarking evaluation of irrigation performance in irrigation districts of Harran Canal in Harran Plain were aimed in 2015. Irrigation districts performances were determined according to the external comparative indicators which were developed by International Water Management Institute (IWMI). The data to be used in the calculation were obtained from the State Hydraulic Works and districts which were named Harranova, Gap, Tektek, Suayb, Kurtulus, Yesilova, Bereket, Imambakir, Reha and Guzelyurt. Firstly, vegetable production values were evaluated according to irrigation districts such as according to the unit area irrigated (5482.1 - 6738.8 t ha^{-1}), the area watered according to the projected unit (4122.5 - 6200.3 t ha^{-1}) and according to the irrigation water diverted. (0.38 - 0.55 t m^{-3}). Secondly, water supply ratios of irrigation districts were determined (1.39 - 3.78 %). In Harranova, Gap, Imambakir ve Reha irrigation districts water supply ratios were upper (2 %), so the source of irrigation was sufficient. But the source of irrigation was insufficient in other districts. In addition water supply ratios were found (0.75 - 2.04 %). Whereas insufficient irrigation water was used in Tektek, Suayb and Guzelyurt irrigation districts, excess water was used in Harranova and Gap irrigation districts. Finally, financial capability values of irrigation districts were determined (72.19 - 391.16 %). Therefore, operation and maintenance expenditures were provided to the users in irrigation districts.

Keywords: Association, Harran Plain, Performance indicator, Sanliurfa, Turkey

Potential Integrated Efficacy of Entomopathogenic Nematodes and an Insecticide Against *Spodoptera litura* (Lepidoptera: Noctuidae)

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Abstract

Since three decades Entomopathogenic nematodes (EPNs) are being used in crop pest management practices but their potential in integration with insecticides was therefore assessed in the present study during 2013. For this, efficacy of two species of EPNs *Heterorhabditis indica* and *Steinernema carpocapsae* and an insecticide (Tracer: Spinosad) was evaluated against second and third instar larvae of *Spodoptera litura* under laboratory conditions in University of Agriculture, Faisalabad, Pakistan. All treatments were applied separately and in combinations with three replicates under Completely Randomized Design. Compatibility of EPNs with tracer for *S. litura* was determined at the following parameters: mortality of infecting juveniles (IJs) after 12, 24 and 48 h dipping in solution of insecticide formulations. Mortality of IJs *S. carpocapsae* and *H. indica* was significantly different after their exposure to the different concentrations of insecticide at different time intervals. For both species of EPNs, highest mortality was observed after 48 h of treatment (Tracer 0.08) which was 12.33% for *H. indica* and 5.33% for *S. carpocapsae*. Low mortality of both species of EPNs was observed concluding that this insecticide was compatible with both EPNs under laboratory conditions. For determining the efficacy of insecticide and EPNs, mortality of second and third instar larvae was recorded 24, 48, 72 and 96 hours after application of treatments. Significant results were found for most of the treatments. Highest mortality (100%) of second instar was observed 48 h post exposure to Tracer @ 0.08, Tracer @ 0.08 + *S. carpocapsae* 1000IJs and 96 h post exposure to Tracer @ 0.08 + *H. indica* 1000IJs. While in third instar maximum mortality (100%) was observed 96 h post exposure to Tracer @ 0.08 + *S. carpocapsae*. Results concluded that chemical and biological insecticides can be used in combinations to achieve highest mortality which can also help to manage insecticide resistance in this pest.

Keywords: EPNs, Armyworm, integrated control

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The Comparison of Organic Plant Production Potential in the Province of Antalya with Turkey and the World, and Some Suggestions on the Development of this Potential

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Abstract

Being situated in the zone of Mediterranean climate, Antalya has a wide range of bio-diversity. The agricultural fields and plant production values have reserved a significant place when to be compared with the general values of Turkey. Though Antalya bears some advantages in terms of organic plant production because of its topographic structure and climatic characteristics, it is easily observed that the organic plant production in Antalya cannot compete with the conventional production, and that the figures of organic plant production are too low. Throughout this review, the organic plant production in Turkey and the whole world has been firstly examined, and then the current situation and potential of Antalya has been covered, and some suggestions of solution have been presented accordingly.

Keywords: Antalya, Organic Product, Sustainability, Agriculture

Determination of the yield and quality parameters of *Lisianthus* under different soil moisture conditions

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Abstract

This study was carried out to determine the effects of different soil moisture levels and irrigation intervals on the yield and flower quality characteristics in *Lisianthus* (*Eustoma grandiflorum* Raf. (Shinn.)) irrigated with the drip irrigation method under the greenhouse conditions in Isparta. The study was conducted in the plastic-covered greenhouse located at the Agricultural Research and Application Center at Suleyman Demirel University in 2014. In the study, the plants were treated with 100%, 75%, 50%, and 25% of the water lost from the field capacity at two different irrigation intervals ($I_1= 2$ days, $I_2: 4$ days). The study was conducted according to the split-split plot experimental design. The irrigation water amount ranged from 180.25 to 493.58 mm and the evapotranspiration measured (ETa) varied between 283.13 and 493.58 mm according to the experimental treatments. The different irrigation schedules applied statistically significantly affected flower stem length, stem diameter, stem weight, the number of flowers per stem, dry matter, leaf area index, and the number of nodes in *Lisianthus*. The experimental treatment in which the whole moisture lost from the field capacity was applied as irrigation water at two-day intervals under the experimental conditions was determined as the optimum irrigation schedule.

Keywords: *Lisianthus*, irrigation interval, evapotranspiration, irrigation water amount.



Quality Characteristics of Dried Mushroom (*Terfezia boudieri chatin*)

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Abstract

Terfezia boudieri chatin is a symbiotic mushroom living together with *Helianthemum* plants in the arid soils. This type of mushroom generally collected by the people during spring season especially in March and April months and found in Gaziantep, Şanlıurfa, Mardin and the other regions of South East Turkey. In this study we investigated the quality characteristics of dried *Terfezia boudieri chatin* mushrooms. One of the most important quality factors in dried fruits-vegetables is their rehydration capacity and the other physicochemical properties. The mushrooms were dried by using freeze drying, vacuum drying and cabinet drying methods at 60 °C. The highest rehydration capacity was found in the mushroom samples dried in a freeze dryer as 3.1 after soaking the samples into the water for two hours. The rehydration capacity of vacuum dried and cabinet dried samples at the same time period were reached to 2.0 and 1.9, respectively. The protein contents of the dried mushrooms were measured as 11.4% in freeze dried samples and the protein content of the cabinet and vacuum dried samples were detected around 10%. The L, a, b color values of the mushroom samples were also measured by using Hunter Lab colorimeter. The highest L value was detected in freeze dried samples as 67 and the L values were 54 in vacuum dried samples, and 38 in cabinet dried samples. The color quality of cabinet dried mushroom samples were significantly lower in comparison to vacuum dried and freeze dried samples. By the way, the highest color quality was measured in freeze dried samples. According to the obtained results and sensorial analysis the freeze dried samples were determined as the most acceptable and high quality dried mushrooms.

Keywords: Mushroom, Drying, Rehydration, Color

IMPACT OF LEMON BALM AND FRENCH LAVENDER EXTRACTS ON BIOGENIC AMINE FORMATION OF VACUUM-PACKED AND REFRIGERATED ANCHOVY FILLETS

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Abstract

Biogenic amine are basic nitrogenous compounds found in various foods as cheese, meat, fish and wine products, mainly caused by amino acid decarboxylation activities of certain microbial growth. The determination of biogenic amine in food products has become a significant quality indicator recently. In the current study, the effects of extract obtained from French lavender (*Lavandula stoechas*) and lemon balm (*Melissa officinalis*) on biogenic amine formation of vacuum packaged anchovy (*Engraulis encrasicolus*) stored at 2±2°C were investigated during 11 days of storage. Fish was separately headed, gutted, filleted and washed after arriving on the laboratory. After that the fillets divided into three groups, which were immersed in French lavender (FL), lemon balm (LB) at level of 1 %, and the control without plant extract (C). Biogenic amine analysis was done using the method of Ozogul et al. (2002). The results of this study showed that putrescine, cadaverine, spermine, spermidine, serotonin, tyramine and dopamine were the main biogenic amines in vacuumed packed anchovy fillets during storage period. Although french lavender and lemon balm extract significantly decreased histamine accumulation in anchovy muscle, maximum allowable histamine level of 5 mg/ 100 g fish (FDA, 1995) was exceed for all treatment at the end of storage period. At the limit of acceptability of anchovy, histamine levels of control, FL group and LB group were 20.85, 7.89 and 6.37 mg/100 g, respectively. The highest putrescine value was observed for the control and treated groups at 11 days of storage. Initial cadaverine level was found as 1.21 mg/100 g and reached maximum value of 31.37, 16.06 and 16.46 mg/100 g for control, french lavender and lemon balm group at the end of storage, respectively.

Keywords: Plant extracts, anchovy, biogenic amine.



Quantitative Trait Analysis for Verticillium Wilt Resistance in Recombinant Inbred Line of Cotton

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Abstract

Cotton Verticillium wilt is a serious soil-borne disease that leads to significant losses in fiber yield and quality worldwide. The development of molecular markers provides a new opportunity in development upland cotton cultivars with high resistance to Verticillium wilt. Among the different types of molecular markers, microsatellites or simple sequence repeats (SSRs) are popular for constructing genetic map, because they are specific and simple. However, few SSR markers have been used in cotton breeding. The development of more new polymorphic SSR markers and genetic map from the new SSRs is therefore of great importance in cotton breeding. Numerous studies have reported mapping of quantitative trait loci (QTLs) for disease resistance in cotton; however, very few reliable QTLs were identified for use in genomic research and breeding. Genetic map can create a basic platform for the studies on marker assisted selection, gene/quantitative trait loci (QTL) cloning, genome sequence assembly, association mapping and evolutionary analysis. In the current study, one of the two RIL populations developed from intraspecific (İs 8 x Orgosto 644) and interspecific gene pyramiding (Giza45x Albania 6172). QTLs will be screened for the identification of QTLs related to verticillium resistance. The results may lay a foundation for quantitative trait loci mapping which will facilitate the improvement of cultivars or varieties within upland cotton.

Keywords: Cotton, Verticillium wilt, QTL, Genetic Mapping



Effect of Storage Temperature and Packaging Material on the Phenolic Compound and Antioxidant Capacity of Turkish Coffee (*Coffea Arabica* L.)

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Abstract

Turkish coffee is a kind of produced coffee from *Coffea Arabica* L. beans. Arabica coffee beans are roasted and grounded into very fine powders for Turkish coffee preparation. The Turkish coffee is special since it is the only method where the coffee is simmered rather than brewed. Epidemiological studies have shown that regular coffee consumption is related to the prevention of cardiovascular and neurodegenerative disorders, obesity, diabetes and even some types of cancers. The health effect of the coffee is generally associated to its phenolic compounds and its antioxidant properties. Turkish coffee is the second most consumed drink in Turkey followed by tea and people store the Turkish coffee at various conditions. The objective of this study was to determine the effect of storage conditions on the total phenolic compound and antioxidant capacity of Turkish coffee. The roasted and fine powdered Turkish coffee samples were packaged within both glass jars and aluminum laminated polyethylene (ALPE) bags, and stored at 4, 25 and 40 °C during 90 days. Extractions were carried out using 1 g sample, at 50 °C for 30 min. Firstly, the effects of solvent type (acetone and methanol) and solvent concentrations (25, 50, 75 and 100%) were evaluated by considering the highest polyphenol extraction. Maximum extraction yield was achieved using 50% acetone. Turkish coffee samples stored within ALPE bags had the highest retention of total phenolic compound and antioxidant capacity at all the temperatures examined. Total phenolic compound of coffee samples stored at 4 °C for 90 days within ALPE bags and glass jars were found as 4629.2 and 4479.2 mg GAE/ 100 g, respectively. The total phenolic compound and antioxidant capacity values were decreased as temperature increased. The lowest retention was observed for the coffee samples stored at 40 °C within glass jars.

Keywords: Turkish coffee, Phenolic compound, Antioxidant capacity, Storage, Packaging



Determination of the problems related to plant protection practices in greenhouses of Fethiye District (Muğla-Turkey)

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Abstract

Greenhouses in our country are one of the areas where pesticides are used heavily. At this point it is important to know how pesticides and alternative methods of chemical control are used in the greenhouses. For this purpose, survey studies were carried out in the greenhouses of the Fethiye district of Muğla province (Turkey) in order to determine the current situation and problems related to plant protection practices especially in weed control. In the study, verbal interviews and in-situ observations were made with a total of 100 farmers in 8 villages and towns where greenhouse production is concentrated in the district of Fethiye. In a study asked totally 28 questions, the answers given to the options were evaluated by distributing proportionally. As a result of the questionnaire survey, it was understood that 59% of the farmers apply soil pesticides and 96% of farmers make a soil solarization before planting. 59% of the farmers declared that the pesticides are applied according to the label dose but, 41% of the farmers confessed that the little more pesticide is added over the recommended dose. 41% of farmers do not take any precautions while spraying and 10% of the farmers declared that they throw empty pesticide boxes around. In contrast, 67% of farmers think that pesticides are dangerous in terms of human health. The money farmers spend on pesticides, 30-35% of the total cost of the year. Herbicides for weed control are only used in 20% of the greenhouses. Others control the weeds by hand or by hoeing. 70% of farmers do not have a separate sprayer for herbicide application. None of the farmers mix herbicides with other pesticides. According to farmers, the most harmful weed species in greenhouses is purslane (*Portulaca oleracea* L.). Our observations support it. 78% of the farmers also control weeds outside the greenhouses and they think are also harmful.

Keywords: Pest management, Safe pesticide application, Weed control



Essential and Toxic Elements in Raw Cow Milk Collected from Şanlıurfa, Gaziantep, and Mardin Provinces of Turkey

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Abstract

The concentrations of 11 macro, trace and toxic elements (sodium, magnesium, phosphorus, potassium, calcium, iron, copper, zinc, lead, arsenic and cadmium) were determined in 99 samples of raw cow milks collected from Şanlıurfa, Gaziantep, and Mardin using inductively coupled plasma mass spectrophotometer (ICP-MS) after microwave digestion. Potassium, phosphorus, and calcium were the most abundant elements with average concentrations of 1391.74 ± 548.62 , 1089.26 ± 271.75 , 853.87 ± 251.27 mg/L, respectively. The toxic element (lead, arsenic, and cadmium) concentrations were found under the limit of detection (<1 µg/L). This results show that raw cow milk samples are suitable for human consumption.

Keywords: Raw cow milk, toxic element, essential element, ICP-MS, Turkey

Physico-Chemical Properties Determination of Commercial Grape Molasses (PEKMEZ)

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Abstract

Molasses is a thick syrup produced from sugar-rich fruits by concentration of juices up to 70-80 soluble dry matter content. Molasses can produced from grape, mulberry, apple, carob, plum, watermelon, apricot, sugar beet and fig but grape is the most common fruit used in molasses production in Turkey. Molasses contains high amounts of sugar, mineral and organic acid; therefore, it is a very important food product in human nutrition. In addition forms of molasses' carbohydrate is in the form of monosaccharides like glucose and fructose therefore molasses can easily pass into blood without digestion and give urgent energy. Properties of molasses show differences with respect to their production process, type and region of raw material, process temperature. In this study pH, acidity, ash, brix, color, dry matter, total phenolic compounds, anthocyanins, antioxidant and HMF (Hydroxy Methyl Furfural) contents of three different regional molasses native to Şanlıurfa Kilis and Tokat were analyzed for their physico-chemical properties determinations. There was a significant difference ($p < 0,05$) between color values of molasses. Şanlıurfa molasses showed lowest lightness value (19.23 ± 0.03) and Tokat molasses showed highest lightness value (74.58 ± 0.02). There were no significant difference ($p > 0.05$) between antioxidant activity of samples. Highest anthocyanin value were observed in Şanlıurfa molasses ($2.51 \pm 0.05 \text{ mg/100g}$) and highest HMF value was observed in Kilis molasses (21.1 ± 0.03). This study is reveal that difference of commercial molasses from different regions with comparing their physico-chemical properties.

Keywords: Grape, molasses, color values, HMF

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Use of Crop Water Stress Index for Irrigation Scheduling of Soybean

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Abstract

Canopy temperature measured with infrared thermometers is an important tool for detecting crop water stress. The crop water stress index (CWSI) is the most often used index which is based on differential of canopy temperature and vapor pressure deficit to detect crop water stress and to schedule irrigation for field crops. The aim of this study is to determine the relationship between the canopy-air temperature difference and the vapor pressure gradient (VPD) to calculate the CWSI value in soybean plants. The study is carried out in randomized complete block design in six different irrigation treatments in three replications. Plots were irrigated when the cumulative evaporation in Class A pan is 25 ± 5 mm using drip irrigation system based on the pan coefficient (k_{pc}) of 0, 0.25, 0.50, 0.75, 1.00, and 1.25. Before and after each irrigation, canopy temperature was measured with a hand-held infrared thermometer in all treatments between 11.00 and 14.00. Throughout the season, before irrigation, soil moisture content was measured. The CWSI values were determined using empirical approach. When using this technique in Antalya conditions, it is suggested to keep the seasonal mean CWSI value approximately 0.26 and index value of 0.40 can be used to start irrigations. Additionally, it is suggested that the amount of irrigation can be determined as much as the amount of evaporation measured until the index value reach 0.40. According to the results obtained, it is concluded that infrared thermometer can be used for irrigation scheduling of the soybean plant in Antalya conditions.

Keywords: Deficit Irrigation, Infrared thermometer, VPD, CWSI,

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15-17 May 2017

FARKLI YILLARA AİT YABANCI OT TOHUMLARININ ÇİMLENME KAPASİTELERİNİN BELİRLENMESİ

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Özet

Farklı yabancı ot türlerine ait tohumlarının çimlenmesi morfolojik ve fizyolojik özelliklerine bağlı olarak su, sıcaklık, oksijen ve ışık gibi çevre faktörlerine ihtiyaç duymaktadır. Bitki yaşamının başlangıcı olan çimlenme; tuzluluk, sıcaklık, ışık, besin, nem, patojenler, tohum kalitesi ve dormansi gibi koşulların durumuna bağlı olarak değişmektedir. Çimlenme ve çıkış esnasında belirtilen koşullarda oluşabilecek olumsuzlukları gidermek amacıyla tohumlar ekim öncesi genel olarak ozmotik koşullandırma (ön çimlendirme) adı verilen çeşitli uygulamalara tabi tutulmaktadır. Bu çalışmada 2002-2016 yılları arasında olan *Chenopodium album* L. türüne ait yabancı ot tohumlarında çimlenme kapasitelerinin belirlenmesi amaçlanmıştır. Bu amaçla uygulanan yöntemler; ışık+nitrat (24 sa, %2-4 KNO₃), alternatif gece-gündüz (10-30 °C) sıcaklıkları, soğukta katlama (1ay) dır. Uygulamalar sonunda yapılan gözlemler ise; tohum nem oranı (%), normal-anormal çimlenme oranı (%), ortalama çimlenme zamanı (gün), kuru madde miktarı (gr) dır. Sonuç olarak tohumların alındığı yıllara bağlı olarak yapılan uygulamalardan farklı etkiler elde edilmiştir.

Anahtar kelimeler: *Chenopodium album* L., çimlenme kapasitesi, tohum ön çimlendirme uygulamaları



Evaluation of Antalya, Konyaalti Parks Outdoor Furniture Design for Autism Spectrum Disorder

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Abstract

Autism spectrum disorder (ASD) is a heterogeneous neurodevelopmental disorder of multifactorial origin. According to the Autism Society, Autism Spectrum Disorders (ASD) are the fastest growing developmental disorder and nowadays occurs in 1 in 68 births. That's why the outdoor furniture are an important context for autistic individuals social development and can facilitate social and peer interaction of many types in urban parks. In turn, opportunities for adequate interaction can foster the development of social cognitive skills, peer acceptance, and the many social and intellectual benefits associated with acceptance. Landscape architecture, as a profession, is responsible for creating environments that accommodate the needs of all types of users. Recent researches have indicated that autism is growing at almost epidemic proportions. Although, autism is mostly ignored by the landscape architects, excluded from urban parks outdoor furnitures for special needs. Consequently this study evaluates outdoor furnitures of 10 parks which are in Antalya Konyaalti District. Therefore, desing principles (unity, balance, harmony, rhythm, scale) and design elements (material, colour, proportion, texture, shape) of outdoor furnitures analyzed and their suitability has been examined for autistic individuals.

Keywords: Autism, Landscape design principles, Outdoor furniture

The Responses of Morphological Parameters and Quality Properties of Dihaploid Tobacco (*Nicotiana tabacum* L.) Lines under Denizli Ecological Conditions

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Abstract

Tobacco is an important industrial plant with its unique nicotine synthesis via roots and has been established as a model species for molecular biological studies. Dihaploid tobacco lines previously obtained through anther culture were compared in terms of morphological parameters and quality properties of tobacco under Denizli ecological conditions with Akhisar 97 as control cultivar. Number of leaves, leaf length, leaf width, fresh leaf weight were determined as morphological parameters and dry matter, crude ash, nicotine analysis were considered as quality properties. Results from analyses of variance indicate that there were significant differences between control cultivar and dihaploid lines in all studied characteristics except for leaf length, leaf width and crude ash. Results revealed that one of dihaploid lines (211) was selected as a promising line in terms of nicotine levels. So, these genotypes would be confidently used as genetic resources in future studies. The obtained data would be beneficial for breeding programs.

Keywords: Leaf length, Dry matter, Crude ash, Nicotine

The Effect Of Mistletoe On Vertical Resin Duct Density Of Scots Pine Wood

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Abstract

Resin ducts are unique to conifers. They are tube-like spaces bordered by special cells that have the ability to secrete pitch or resin into the neighboring ducts. One of the apparent purposes of these ducts is to protect trees and seal up a wound by exuding resin to cover the damaged area of the tree. However high concentration of resin may make Scots pine wood unusable. Resin-rich softwoods can exude resin to surface of the wood, affecting finishing operations such as sanding, painting and varnishing and causing a decrease in wood quality and value. The objective of this study is to determine the effect of mistletoe on vertical resin duct density of Scots pine wood according to infection level. Assessment of infection level was based on the six-class dwarf mistletoe rating system (DMRS). In this regard, a total of 9 mistletoe infected and 3 uninfected trees with a diameter greater than 20 cm at breast height (dbh) were cut, and 10 cm thick round discs were taken from each tree at the dbh level. To determine vertical resin duct density, transverse sections were obtained from the disc samples in the laboratory using sliding microtome at 15-20 μ m intervals. The transverse sections were observed and pictures were taken with a digital photo microscope and evaluated using an image system software to determine vertical resin duct density of samples. Correlation and regression analyses were conducted to examine the relationship between infection level, and resin duct density. The results indicated that a positive relationship exists between infection level, resin duct density. Regression models were developed to predict resin duct density using infection level.

Keywords : Resin content, Mistletoe, Scots pine



Analysis of Garlic Production and Marketing in Kahramanmaras Province of Turkey

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Abstract

Garlic have come from same family, which is liliaceae, with onion and leek. It is herbaceous plant living 2 years. Because of the fact that garlics rarely seed, garlics are produced by their tubers. The history of garlic is as old as human history. At the present time, garlic is grown in West, East and Middle Asia, Europe, North Africa, China, India, Egypt, America and Turkey. In 2015, the total production amount of garlic is 199.223 tones and average yield is 0,9 ton in Turkey. Kastamonu province is on the first rank with 23.328 tones, Kahramanmaras province comes second with 15.527 tones and Gaziantep province ranks third with 14.878 tones. Kahramanmaras, which is the city that mostly meets the majority of green garlic need for Turkey, has 6.000 decaire field yearly for garlic cultivation. In this study, it is aimed to analyze garlic production and marketing structure in Kahramanmaras Province. Statistical data used in the study is obtained from Turkish Statistics Institute and Directoiate of Food, Agriculture and Livestock. Also producer and marketing problems will be discussed.

Keywords: Garlic, Production, Marketing, Kahramanmaras

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15-17 May 2017

Nutritional Properties of Quinoa (*Chenopodium quinoa Willd.*) and Its Usage in Bakery Products

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Abstract

Quinoa (*Chenopodium quinoa Willd.*) is an endemic plant species peculiar to South America. Different names such as jupha, supha, suba and daheu are used to refer to quinoa. But in Bolivia, Peru, Ecuador, Argentina and Chile, it is especially called as quinoa and quinoa. Although quinoa is not belong to the Gramineae family, these seeds can be milled into flour and used as a cereal crop which therefore it is called also as a pseudocereal. Quinoa has high nutritious value that it has rich in proteins, lipids, fibres, vitamins (B, C and E) and minerals (Fe, Ca, Mg, K). Protein content of quinoa seeds ranges between 14-18%. Due to their balanced amino acid composition with high content of essential amino acids, quinoa proteins are known as one of the high-quality proteins. Additionally, quinoa dietary fibre ranges between 7-10% which is similiar to grains as well as its soluble fiber content is between 1.3-6.1%. According to its high nutritional value, United Nations has recently assigned the 2013 as “International Year of Quinoa”. Bakery products have been mostly enriched with quinoa. Especially, pastas, breads, cakes, biscuits and breadsticks were the bakery products which quinoa seeds were used in the recipes. These studies conclusively showed that quinoa is a potential source for increasing the nutritional value of the bakery products.

Keywords: Quinoa seed, bakery products, enrichment.



Determination of Effects of Divided Fertilizer in Different Growth Stage on Some Yield Characteristics of Soybean Cultivated Under Water Deficit

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Abstract

This research was carried out to evaluate the effects of divided fertilizer applications in different growth stages on yield and yield parameters including number of pod and bloom of soybean cultivated under water deficit in 2013. Experiment was designed as factorial design with three replication and five irrigation schedule (as a depletion of available water content, 25%, 50%, 75%, 100% and 125% excessive of depletion). Irrigation frequency was planned as once a week trough irrigation season, and drip irrigation system was employed. During growth season, the amount of total fertilizer (NPK) required was applied to all treatments (F_0 , F_2 ve F_3) during seeding. Whereas nitrate fertilizer that is needed during three different growth period (R1, R2 and R3).was applied by dividing to 2 (F_2) and 3 (F_3).

According to the results, the amount of applied irrigation water, evapotranspiration and water use efficiency (WUE) varied between 185.46 and 791.04 mm, 253.51 and 781.71 mm and 0.52-0.89 kgdam⁻¹ in different irrigation schedules, respectively. The seed yield in F_0 , F_2 and F_3 treatments were obtained 202.76, 299.15, 389.14, 401.63, 417.68 kgda⁻¹ and 226.08, 293.95, 370.60, 407.08, 414.15 kgda⁻¹ and 208.61, 265.72, 340.94, 420.50, 439.35 kgda⁻¹ in I_{25} , I_{50} , I_{75} , I_{100} , I_{125} irrigation levels, respectively. While different irrigations schedules were found to be influential on seed yield ($p<0.01$) and dry mass in blooming and harvest stages ($p<0.01$), the weight of 1000 seed ($p<0.01$), fat content ($p<0.01$), no affect on number of bloom and pod in blooming stage, and protein content were observed. The chlorophyll content and stomatal conductance decreased with increasing drought in all applications.

Keywords: Soybean, Deficit Irrigation, Fertigation, Seed Yield, Dry Matter

Effect of Temperature on Compression Properties of Oriental Beech (*Fagus orientalis* L.) Wood in Radial and Tangential Directions

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Abstract

There are limited studies concern about mechanical properties of wood material in Radial and Tangential directions while lots of for Longitudinal directions. Effect of temperature on compression strength properties of Oriental Beech (*Fagus orientalis* L.) wood in perpendiculars to longitudinal direction has been investigated in this study. Trees were harvested from Devrek stand in Zonguldak and logs were sawn to radial and tangential planks. Laths (prepared from these planks) were exposed to four different temperatures (120-150-180 and 210°C) for three different durations (2-5 and 8 hours) at atmospheric environment conditions. Then, small and defects free compression samples, 20x20x600 mm, were cut in R and T directions. Control samples of each temperature groups were used to determine total change values. Compression test were conducted following the acclimatization of the samples at 65% Rh and 20°C conditions. Compression test was conducted using a Bi-axial extensometer. And then young modulus and compression strength properties were calculated using obtained values. According to results, it was clearly seen that temperature and duration have effects on Young modulus and compression strength. Compression strength values in R direction decreased up to 27,7% while temperature raised. Young modulus values in R direction were not changed so much at 120 and 150°C but decreased up to 18,35% along with the increase in temperature. Initially compression strength and Young modulus values in T direction increased a little at 120 and 150°C but then respectively decreased up to 24,4% and 13% along with the increase in temperature

Keywords: Beach, Young modulus, compression, temperature



Use of CATIA for Analysis of Structures Constructed with Sustainable Biomaterial

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Abstract

Product design is especially related to some parameters such as Aesthetic, Strength, Cost, Manufacturability, and being Environment friendly. Some of these parameters can also be used to describe the sustainable consumption both for material and product. One of the most important sustainable biomaterial is wood due to its outstanding properties such as renewability, recyclability and biodegradability. Even if wood is renewable, we have to avoid unnecessary consumption of this bio resource. There are lots of things to take into consideration to achieve this goal. Software usage is one of them and lets us design safer and durable constructions by analyzing behavior of wooden members under almost real-like conditions and calculating the exact dimensions of members. CATIA is one of these software which can be used for CAD, CAM, and CAE applications. And it's a quite unknown software from the community. From this point of view, this study aims to represent how CATIA is used to conduct Computer Aided Engineering application by an experimental design of wooden structure.

Keywords: CATIA, Biomaterial, Wood, CAE

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— Cappadocia/Turkey —

15-17 May 2017

Some Physicochemical Properties of the Whole Fruit Mandarin Jam

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Abstract

The citrus fruits have a high nutritive value and are also beneficial effects for human health due to their high flavonoid content. Mandarin a kind of citrus fruits are consumed as fresh and processed juice and/or juice concentrate. The aim of this work was to produce jam and evaluate its physical, chemical and sensory qualities from satsuma mandarins that are inconsumable or low quality small fruits. The jam was produced with 1:1 fruits:sugar ratios in an open vessel traditional technique. Produced whole fruit mandarin jam had reasonable favour score from applied hedonic scale. The mean values of total soluble solid, titratable acidity as citric acid, dry matter, ash percent and pH of jam samples on wet basis were found as 70.38, 0.098, 74.77, 0.28 and 2.87 respectively. Hunter L, a and b values of tangerin jam were measured as 45.34, 11.48, and 21.16 respectively. Total phenolic content, antioxidant capacity and vitamine C of sample were measured 201,60 mg/100g as gallic acid equivalent and 102,24 mg FeSO₄.7H₂O/100g, 0.07 mg/100 g respectively.

Keywords: Mandarin, satsuma, jam

The searching for optimum COD removal conditions by *Pleurotus eryngii* var. *ferulae* from synthetic sulfamethazine solutions using RSM

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Abstract

This study aims to determine the optimum conditions for *P. eryngii* var. *ferulae* at of sulfamethazine (SM) biosorption from synthetic solutions with reduction in chemical oxygen demand (COD). The optimum conditions were optimized using the response surface methodology (RSM) developed by the application of the quadratic model associated with the central composite design. For this aim, RSM was employed to determine the effects of some parameters on this biosorption process by fungal *P. eryngii* var. *ferulae* biomass as effective and available adsorbent. The investigated parameters were sulfamethazine initial concentration (70–235 mg L⁻¹), solution pH (3–7), adsorbent dosage (0.3–1.5 g), and time (5–25 minute). The significant factors on each experimental design response were identified from the analysis of variance. The results of RSM analyzes revealed that optimum conditions of initial SM concentration, pH, adsorbent dosage, and time for maximum COD removal (82 %) were achieved as 400 mg L⁻¹, 11 , 1.46 g, and 15.4 min, respectively. The results indicated that dead biomass of *P. eryngii* var. *ferulae* was a suitable adsorbent for the removal of COD in the SM medium from synthetic solutions.

Keywords: *Pleurotus eryngii* var. *ferulae*, COD reduction, RSM



The Effect of High Pressure on Some Ripening Properties of White Cheese Produced from Different Milks Species

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Abstract

White cheeses made from pasteurized cow and goat milk were treated high pressure processing at 300 and 450 MPa for 5 min at 20°C and ripened in brine at +4°C for 2 months. The effects of pressure treatment on the chemical, biochemical, microbiological and color properties were determined. Compared to control cheeses, protein, fat and salt content of cheeses were not affected by the high pressure application at low level (300 MPa) ($P>0.05$) whereas the increase in pressure showed enhancer effect on the values of dry matter, protein and fat in cow milk cheeses. The pH values of the samples increased with high pressure application ($P<0.05$) and exhibited negative correlation with acidity values tended to decrease as expected. Water-soluble nitrogen, trichloroacetic acid-soluble nitrogen and ripening index values of cheeses tended to increase with pressuring effect and during storage whereas lipolysis was not change with pressure process. The number of total aerobic mesophilic bacteria, *Lactococcus* spp., and *Lactobacillus* spp. in both cow and goat milk cheese samples were decreased more with the increase of the pressure ($P<0.05$). The total molds-yeasts and coliform counts for the cheese samples were not detected after high pressure processing but molds-yeasts counts increased towards end of storage. While L * and b * values of cheeses were not affected from high pressure ($P>0.05$), decrease in a* value was determined in both cheeses ($P<0.05$) significantly.

Keywords: High Pressure, White Cheese, Ripening

Cytotoxic Activity And Phenolic Profiles Of *Reddellomyces Porvulosporus* Associated With Eucalyptus Tree In Turkey

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Abstract

Truffles are seasonal and economically important edible fungi growing in many countries all over the world. Truffle species are known as the world's most expensive mushroom and these species has a popularity because of their flavor and delicious taste [1]. Also, truffle species are rich in protein, amino acids, fatty acids, minerals and carbohydrates. *Reddellomyces porvulosporus* (G.W. Beaton & Malajczuk) Trappe, Castellano & Malajczuk is a ectomycorrhizal fungi associated with Eucalyptus tree and growing under soil. The aim of this study was to investigate cytotoxic activity and phenolic composition of the Truffle *R. porvulosporus* collected from Muğla. In this study, Dried *R. porvulosporus* was extracted with methanol and water at room condition, filtered and evaporated under vacuum. The cytotoxic activity of the methanol and water extracts were performed against breast (MCF-7), lung (H1299) and L929 Fibroblast cell lines using WST-1 assay. The results were given as percentage of Relative Cell Viability (%). The phenolic profile was analyzed by HPLC-DAD. Sixteen phenolic and organic acids namely; fumaric acid, gallic acid, protocatecheuic acid, p-hydroxybenzoic acid, catechin hydrate, 6,7-dihydroxy coumarin, 2,4-dihydroxy benzoic acid, caffeic acid, vanillin, p-coumaric acid, ferulic acid, coumarin, trans-2-hydroxycinnamic acid, ellagic acid, rosmarinic acid and trans-cinnamic acid were analyzed. The Cytotoxic activity data showed that more than 70% of the fibroblast cell line was viable after incubation of methanol and water extracts of *R. porvulosporus* at the concentration of 6.25-100 µg/mL. The water and methanol extracts showed high toxicity against H1299 cell line while the methanol extract exhibited high toxicity against MCF-7 cell line. As for phenolic compounds, Fumaric acid (54.74 µg/g) and protocatecheuic acid (1.20 µg/g) were identified as the most dominant phenolic compounds.

This study was financed by The Scientific and Technological Research Council of Turkey (TUBITAK-114Z644).

Keywords: *Reddellomyces porvulosporus*, Eucalyptus tree, Cytotoxic activity, Phenolic profile, HPLC-DAD

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Efficiency Of Humic Acid Application On Tomato (*Solanum Lycopersicum* L.) Seedlings Growth Parameters

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Abstract

In this study, a widely grown in Turkey Province tomato (*Solanum lycopersicum* L.) plant, seedling growing media (peat: perlite: (2:1)) added at different doses (0, 500, 1000, and 2000 mg L⁻¹) humic acid (15% humic + fulvic acid) applications to determine the effects on seedling growth that conducted the trial greenhouse. Completely randomized design with 3 replications in each application study was carried out. The chlorophyll content and stomatal conductance measurements created after the plants were harvested and the harvested plants, stem length, root length, shoot length, stem diameter, root weight, stem weight, leaf weight were measured in root, stem and leaf dry matter amounts calculated. As a result of this study, depending on the doses of humic acid applications at different doses, stem length, root length, shoot length, stem diameter, root weight, stem weight, leaf weight increased compared to control groups. Especially, 1000 mg L⁻¹ humic acid dose led to further increases.

Keywords: Tomato, humic acid, seedling



Phenolic Profiles Of *Trametes* Species: Commercially Important Tree Mushrooms

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Abstract

Phenolic compounds are found in plants and mushrooms, constitute a significant part of the human diet and are of interest due to their antioxidant properties and potential beneficial health effects. Some findings suggest that the biological properties of phenolic compounds are associated with to their antioxidant activity. Antioxidant properties of phenolic compounds have a vital role in the stability of food products, as well as in the antioxidative defence mechanisms of biological systems Phenolic compounds can be divided into two classes: simple phenols and phenolic acids. Phenolic acids are found as the main phenolic compounds in mushrooms [1]. Phenolic compounds are secondary metabolites having antioxidant, antimicrobial, anti-inflammatory and anti-cancer activities [2]. Because of these biological importance of phenolic compounds, in this study the phenolic profile of *Trametes bicolor*, *Trametes pubescens*, *Trametes suaveolens* and *Trametes versicolor* were identified by HPLC-DAD. The phenolic profile was determined according to the method of Barros et al. [3] with slight modification. Sixteen phenolic and organic acids i.e. gallic acid, fumaric acid, protocatecheuic acid, catechin hydrate, *p*-hydroxybenzoic acid, 6,7-dihydroxy coumarin, caffeic acid, vanillin, 2,4-dihydroxy benzoic acid, *p*-coumaric acid, ferulic acid, coumarin, trans-2-hydroxycinnamic acid, ellagic acid, rosmarinic acid and trans-cinnamic acid were analysed. Fumaric acid was the most abundant phenolic compound in *T. bicolor* (0.61 µg/g), *T. suaveolens* (1.64µg/g), *T. versicolor* (2.44 µg/g) while catechin hydrate was found as major phenolic compound in *T. pubescens* (2.22 µg/g).

Keywords: Phenolic compounds, Tree mushrooms, HPLC-DAD, Fumaric acid, Catechin hydrate

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In Vitro Antioxidant Activities Of Polysaccharide Extracts From Tree Mushrooms

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Abstract

Mushrooms have attracted much attention as functional foods and as a source of beneficial bioactive compounds. Polysaccharides are the most important bioactive compounds obtained from mushrooms. They showed several medicinal properties such as antioxidant, anti-tumour, immunomodulatory and hypoglycemic [1]. In this study, we aimed to investigate the antioxidant activities of polysaccharides obtained from mushrooms i.e. *Fomes fomentarius* (L.) Fr., *Ganoderma adspersum* (Schulzer) Donk., *Ganoderma applanatum* (Pers.) Pat., *Ganoderma lucidum* (Curtis) P. Karst. and *Pleurotus ostreotus* (Jacq.) P. Kumm. Antioxidant activity was tested using five complementary tests; namely, β -carotene-linoleic acid, DPPH[•] scavenging, ABTS^{•+} scavenging, cupric-reducing antioxidant capacity (CUPRAC), and metal chelating assays. The polysaccharide extracts were tested at different concentrations and inhibition percentage values determined. The results compared with BHA, α -tocopherol and EDTA used as antioxidant standards. The polysaccharide extract of *G. adspersum* showed the highest antioxidant activity in DPPH[•] and ABTS^{•+} scavenging assays with percentage inhibition values of 80.80 ± 0.22 and 91.12 ± 0.53 at 800 $\mu\text{g/mL}$ concentration, respectively. In β -carotene-linoleic acid and CUPRAC assays, polysaccharide extract of *F. fomentarius* exhibited better activity than those of antioxidant standards. The polysaccharide extract of *P. ostreotus* possessed high metal chelating activity with percentage inhibition value of 78.76 ± 0.96 at 800 $\mu\text{g/mL}$ concentration.

Keywords: Polysaccharides, Antioxidant activity, Mushroom species

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Makro-Elements İn Raw Sheep Milk Samples From Şanlıurfa, Turkey

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Abstract

The purpose of this study was to determine the content of macro-elements (calcium, potassium, magnesium, and sodium) in raw sheep milk by inductively coupled plasma-optical emission spectroscopy (ICP-OES) after microwave- assisted digestion with nitric acid and hydrogen peroxide. The raw sheep milk samples were gathered from two boroughs (Akçakale, Halfeti) of Şanlıurfa city. The mean concentration of calcium, potassium, magnesium, and sodium were 1450.33 mg/L, 1245.58 mg/L, 139.54 mg/L, 340.8 mg/L, respectively. The microwave acid digestion method of this study could provide a useful alternative for the characterization of milk and dairy samples. The studied macro-elements were found to be healthy contribution for daily nutrition to consumers.

Keywords: Sheep milk, macro-element, ICP-OES, Şanlıurfa, Turkey

Effects of Cultivar, Maturity Index and Growing Region on Fatty Acid Composition of Olive Oils

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Abstract

Olive oil is an important food for people the countries surrounding the Mediterranean Sea and the presence of biologically important minor constituents such as high content of healthy monounsaturated fatty acid (FA). Virgin olive oil (VOO) is valued for its organoleptic and nutritional characteristics, and is resistant to oxidation due to presence of high monounsaturated fatty acid (MUFAs) and low polyunsaturated fatty acid (PUFAs) content. The fatty acid composition of olive oils is influenced by many factors including, climate conditions, geographic area, cultivar, fruit ripeness and agricultural practices. The health benefits of extra virgin olive oil (EVOO) consumption have been related to its well-balanced FA composition. Major FAs in olive oils are oleic (55–85%), palmitic (7.5–20%), linoleic (7.5–20%), stearic (0.5–5%), palmitoleic (0.3–3.5%), and linolenic (0.0–1.5%) acids, and traces of myristic, arachidic, and margaric acids have also been found. Oleic acid is one of the most important FAs in olive oils due to having the nutritional wealth and support for oxidative stability. In consequence, the olive oils differ in composition of fatty acid mainly depending on variety, maturity index and growing region. Therefore, this review may contribute good information about the effect of these principal factors on the fatty acid composition of olive oils.

Keywords: Cultivar, Fatty acid, Growing region, Maturity index, Olive oil



Chlorophiles and Phycocyanin Extraction from *Spirulina* and Their Ferric Reducing Antioxidant Power

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Abstract

It is well known that microalgae are used in agriculture, animal feed, wastewater treatment, biodiesel production, pharmaceutical, and food industries. Besides, as photosynthetic organisms, microalgae can be used for ecological foods and/or functional food additives, they have antioxidant, antihypertensive, antimicrobial, antidiabetic, antiviral, anticoagulant, antitumor bioactivity due to their bioactive contents such as proteins, amino acids, essential oils acids, vitamins, natural pigments. In this study, Ferric Reducing Antioxidant Power (FRAP) of chlorophyll and phycocyanin obtained by methanol, acetone and sodium nitrate sequential extraction from dried *Spirulina* powder were determined. Methanolic extracts have higher chlorophyll content (26.8 mg/g Chlorophyll-a) while sodium nitrate has higher phycocyanin content (154.53 mg/g phycocyanin) compare to others. On the other hands, methanolic extracts have highest antioxidant activity with 17880 µg FeSO₄.7H₂O /g *Spirulina* compare to acetone and sodium nitrate extracts even secondary sequential methanol extraction. It is concluded that sodium nitrate is recommended for phycocyanin pigments while methanol and acetone for antioxidant extraction.

Keywords: *Spirulina*, Phycocyanin, Chlorophyll-a, Ferric Reducing Antioxidant Power

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Domates Yaprağı Ekstraktının Tohum Çimlenmesi Üzerine Farklı Etkileri

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Özet

Çimlenmenin iyileştirilmesi olarak adlandırılan ön çimlendirme, osmotik tohum uygulamaları; geleneksel ve kimyasal yöntemler ile yapılmalarına karşın son zamanlarda alternatif doğa dostu, temiz, ucuz ve en önemlisi bitkisel kaynaklı (uçucu yağlar, tıbbi bitki ekstraktları, propolis, deniz yosunu vs.) uygulamalar söz konusu olmaktadır. Bu uygulamalar ile tohum veya fide kaynaklı bazı durumlarda yaşanabilecek üretim ve verim kayıpları engellenerek çimlenme ve fide çıkış performansı artırılabilir. Çalışmamızda şekerpancarı (Seranada, Turbata, Laila) ve turp (Kara, Ufacık, Başak) türlerine ait 3 farklı çeşidin tohumları kullanılmıştır. Ön uygulama olarak 6 farklı domates çeşidine ait alt, orta ve üst yaprakların ekstraktlarında 25 °C de 2 gün bekletilerek çimlenmeye alınmıştır. Sonuçlara göre; Seranada şeker pancarı çeşidinin tohumlarının çimlenme oranı, Seyit domates çeşidinin üst yaprak ekstraktı uygulaması ile en iyi (%69) sonucu verirken; Turbata çeşidinin tohumlarında ise Arzum domates çeşidinin orta yaprakları ekstraktı ile yüksek oranda (%84) çimlenmiştir. Turp tohumlarında genel olarak çimlenme oranı yüksek olurken uygulama sonuçlarında ekstraksiyonda kullanılan domates yapraklarının alınma yeri fark yaratmamıştır. Bununla beraber Serenada şekerpancarı ve Kara turp tohumlarının ilk çimlenme oranlarında domates yaprağı suyu etkili bulunmuştur.

Anahtar kelimeler: Domates, tohum ön uygulamaları, turp, şekerpancarı

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Identification of Ecological Connectivity for Brown Bears: Example of Malatya Province

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Abstract

Increasing population, industrialization and use of agricultural land in the world results in devastation and fragmentation of natural areas, and thus the wild life is threatened. Especially big carnivorous animals are influenced heavily by this situation. They are vulnerable due to the need for wide areas for habitation, low reproduction rates, huge body size and the fact that they are perceived as threats by people because of their predatory characteristics. Therefore, these species should be considered as a priority in protection strategies. Connectivity is one of the tools used for preventing the mentioned devastation created by human activities and enabling protection of the habitats of mentioned species. An umbrella species, big carnivorous brown bear (*Ursus arctos* L) is tackled in the study which is found in the natural landscape of Malatya province. The purpose of the study is to identify their habitats via Geographical Information Systems and ensure ecological connectivity among habitats. Similar studies are examined as examples within the applied model in this context and they are transferred to the field. The mobility among reproduction and population areas of the brown bears is provided by the to-be-established ecological networks, while they are protected from isolation and spatial losses.

Keywords: Brown bear (*Ursus arctos* L), ecological connectivity, habitat model, Malatya,



Trend Analysis Precipitation and Effect of Agriculture in Bingol Province

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Abstract

Precipitation is one of the most variable parameters in climate elements and is an important factor in observing climate change. Turkey is gradually decreasing the average rainfall of 631 mm with the effect of global warming. These decreases in the amount of precipitation will affect of adverse manner agricultural production. In addition, water and water resources will come serious droughts about to the fore in the future as factors that cause drought continue. In this study, trends in precipitation at annual, seasonal and monthly time scales for the periods of 1985-2016 and effect to agricultural were examined for the Bingol which is mostly located in the eastern region. A trend in decreasing annual rainfall was determined but not statistically significant. There was no statistically significant difference in the seasonal precipitation amounts, but the tendency in the decrease in the all seasons was determined. When the monthly rainfall for many years is determined statistically significant that only the tendency towards the falling rainfall amount in April.

Keywords: Trend Analyses, Precipitation, Agriculture, Bingöl Province

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Effects of Fruit Thinning on Morphological, Physico-Chemical Properties, Bioactive Compounds, Antioxidant Activity and Pest & Disease Control in Pomegranate Fruit (*Punica granatum* L.)

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Abstract

Extreme amounts of buds, flowers and fruit on the tree by thinning are removed from the tree by hand, by chemical or mechanical methods, and the process of increasing the quality of the fruit remaining on the tree. Thinning; the remaining fruit on the tree, fruit weight, fruit size, fruit color, increase TSS beside, the increase the tolerance of trees to winter colds, the increase in the success rate of disease and pests, the decrease of the harvest and the vacancy costs, the prevention of branch breakage, the promotion of the formation of the fruit buds required for the next year and, more importantly, reducing the tendency to periodicity. In this study, thinning of the pomegranate fruit, morphological, physical and chemical properties of fruits, effects on antioxidant activity and disease-pest population were discussed.

Keywords: Pomegranate, *Punica granatum*, fruit thinning, hand thinning, GA₃, Ethrel, Mealy bug, Carob moth

The Effect of Honeybee Pollination on Productivity And Quality of Strawberry

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Abstract

90 % of the food stuff all around the world is obtained from plants. 77 % of these plant needs pollination by bees. Therefore, in order to achieve sufficient pollination, bee colonies are needed in florescence period. When pollination and fecundation doesn't exist, abscission takes place without the fruit's being able to complete its development. In conditions where fecundation is insufficient, the shape of the fruits is deformed and product quality is low, although fruits are able to clutch on the plants. In case of inadequate pollination and fecundation, such horticultural crops such as apple, pear, strawberry, fig, kiwi, tomato, aubergine and pepper are directly and adversely affected in terms of plant's florescence, development, pollination and fecundation, as well as quality and quantity of the product. When enough attention is paid to pollination, production growth in angiospermae is observed. In this study, according to the data obtained in a study conducted in order to determine the effect of honeybee on pollination and fecundation of strawberry in Uşak province between the years 2014 and 2016, a considerable increase in productivity and quality has been witnessed and it has been observed that homogeneity exists in strawberry fruits.

Keywords: Strawberry, Bees, Yield, quality

Determining Crop Water Stress Index in the Irrigation Program of Cotton Crop

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Abstract

The study was carried out at three different water treatments and three replications according to the factorial design in the Eastern Mediterranean climate conditions with the Carisma cotton variety. The water stress levels were non-irrigated (I_0), full irrigated (I_{100}), 66% (I_{66}) and 33% (I_{33}) of the full irrigated treatment. Measurements were started when the canopy reached 80% maturity. The canopy temperature (T_c) and leaf temperature (T_y) measurements were taken with an infrared thermometer between the hours of 10:00 and 17:00 daily. The air temperature and relative humidity values were obtained from the meteorological station located on the field with hourly measurements. Crop Water Stress Index (CWSI) was determined by Idso method. It was found that evapotranspiration values increased with increasing irrigation levels. The average values of I_0 , I_{33} , I_{66} and I_{100} irrigation treatments were found to be 205.9, 535.7, 763.0 and 1006.8 mm respectively. The equation obtained for the I_{100} (full) irrigation treatment (lower baseline) was $T_c - T_a = -2.5527VPD - 1.3947$ ($n=83$) and the equation of I_0 irrigation treatment (upper baseline) was $T_c - T_a = -0.0496VPD + 2.4609$ ($n=77$). Leaf surface temperatures and CWSI values decreased as the evapotranspiration increased. The average values of CWSI were measured as 1.14, 0.56, 0.20, 0.01 for the I_0 , I_{33} , I_{66} and I_{100} treatments respectively while T_y values were determined as 34.5, 32.5, 29.9, 28.1 °C for the I_0 , I_{33} , I_{66} and I_{100} treatments respectively.

Keywords: Crop Water Stress Index (CWSI), Irrigation, Cotton, Evapotranspiration, Leaf Temperature



Screening of Urease and Tyrosinase Enzyme Inhibition Activities of Two *Thymus* Species: *Thymus cariensis* and *Thymus cilicicus*

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Abstract

The genus *Thymus* is one of the important members of the Lamiaceae family which comprises more than 220 taxa throughout the world. *Thymus* species are known as medicinal plants due to their biological and pharmacological activities. *Thymus* oils and extracts are widely used in pharmaceutical, cosmetic, and perfume industry, also for flavoring and preservation of several food products. *Thymus* species are known as “kekik” locally in Turkey and consumed as herbal tea, spicy and folk medicine. Tyrosinase is acting important role for melanin biosynthesis. Excessively active tyrosinase, which results in an over-accumulation of melanin in the human body, can cause a series of common skin diseases from freckles to malignant melanoma. Abnormal tyrosinase activity is related to Parkinson’s disease. Urease inhibitors have recently attracted much attention as potential new anti-ulcer drugs and also, in agriculture, high urease activity causes significant environmental and economic problems by releasing abnormally large amounts of ammonia into the atmosphere during urea fertilization. In this study, urease and tyrosinase enzyme inhibition activities of essential oils and various extracts from “*Thymus cariensis*” and “*Thymus cilicicus*” were analyzed. The acetone and methanol extracts of *T.cilicicus* showed the best inhibitory activity against Urease enzyme ($89,86 \pm 0,87\%$ and $85,60 \pm 0,10\%$ respectively) at 200 $\mu\text{g/mL}$ concentration. The methanol extract of *T.cariensis* ($58,16 \pm 1,35\%$) exhibited the best Tyrosinase enzyme inhibitory activity, and followed by the hexane extract of *T.cilicicus* ($50,37 \pm 1,51\%$) at 200 $\mu\text{g/mL}$.

Keywords: Enzyme inhibition, *Thymus cariensis*, *Thymus cilicicus*, Urease, Tyrosinase

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YETİŞTİRME ORTAMINA UYGULANAN FARKLI KATKI MADDELERİNİN FİDE GELİŞİMİ ÜZERİNE ETKİLERİNİN BELİRLENMESİ

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Özet

Sebzecilikte ileri düzeyde üretim yapabilen bazı ülkelerde, fidecilik konusu oldukça önemli bir yer almaktadır. Ülkemizde ise halihazırda geleneksel üretim metotları ile fidecilik yaygın olarak devam etmektedir. Ancak son zamanlarda toprak düzenleyicilerin kullanımı organik ve geleneksel yetiştiricilikte oldukça dikkat çekmektedir. Toprak düzenleyiciler organik (sapsaman, kompost, bitkisel artıklar, solucan veya tavuk gübresi, bitki ekstraktları gibi) yada inorganik (perlit, kum, kil, vermikulit gibi) olarak ikiye ayrılmaktadır. Bu bağlamda fide yetiştiriciliği için uygun ortam ve yöntemler konusunda çalışmalar devam etmektedir. Çalışmamızda marul, roka, domates ve lahana yaprak ekstraktları sıvı gübre gibi farklı kombinasyonlar halinde uygulandı. Haftada bir kere maydanoz ve lahana fidesine roka suyu, karnabahar ve brokoli fidesine domates suyu, marul fidesine marul suyu verildi. Yapılan ölçümlerde; yaprak sayısı, yaprak ayası genişliği, kök boğazı kalınlığı, fide boyu, klorofil ölçümü ve antosiyanin varlığı belirlenmiştir. Bu uygulamaların etkileri türlere göre değişiklik göstererek hemen hemen tüm uygulamalar kontrole göre artış belirlenmiştir.

Anahtar kelimeler: Fide üretimi, organik ve inorganik toprak katkı maddeleri, bitki–yaprak ekstraksiyonu

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Effect of surface/core layer ratio on some physical and mechanical properties of three-layered medium density fiberboard

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Abstract

Some physical and mechanical properties of 3-layered medium density fiberboard (MDF) panels produced at different surface/core layer ratios (30/70, 40/60, 50/50, 60/40, and 70/30), were investigated. The surface layers of MDF panels consisted of fine fibers while the core layer consisted of coarse fibers. Pine wood fibers were used in the surface layers and beech wood fibers were used in the core layer. The wood fibres were produced using a thermo-mechanical refining process without any resin at the Kastamonu Integrated Wood Company, Gebze, Turkey. The MDF panels with dimensions of 10 mm x 400 mm x 400 mm were produced under laboratory conditions. Density, one day thickness swelling (TS), bending strength (MOR), modulus of elasticity (MOE), and internal bond strength of the MDF panels were determined according to European Standards. One-day TS values of the MDF specimens decreased from 29.2 to 46.7% as the surface layer ratio increased from 30 to 70 wt% in the MDF. However, bending properties of the MDF panels improved with increasing surface layer ratio.

Keywords: Medium density fiberboard, Wood fiber, Technological properties, Three-layered fiberboard

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Technological Properties Of Thermoplastic Composites Filled With Wood Flour Of *Astragalus Aureus* Willd

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Abstract

Astragalus, which has the largest genus in Angiosperms of Turkey and grows in abundance all over the country, is perennial, thorny or thornless, usually semi- woody shrubs. In this study, potential use of *astragalus* plant as a reinforcing filler in production thermoplastic composites were investigated. *Astragalus aureus* Willd flour filled injection molded polypropylene composites with maleic anhydridegrafted polypropylene (MAPP) were produced under laboratory conditions at 30, 40, 50, and 60 wt% contents of *astragalus aureus* Willd. thickness swelling and water absorption of the composite specimens increased with increasing content of *astragalus aureus* Willd after the specimens were immersed in water at room temperature for 28-days. The modulus of elasticity in bending and tensile of the polypropylene composites improved with increasing content of *astragalus aureus* Willd flour up to 40 wt% while the bending strength, tensile strength, and notched impact strength of the composites decreased.

Keywords: *Astragalus aureus* Willd wood, Polypropylene, Thermoplastic composite, Mechanical Properties, Physical properties



Identification of A Small Heat Shock Protein In Egyptian Cotton Leaf Worm, *Spodoptera Littoralis*(Lepidoptera: Noctuidae)

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Abstract

Insects use their complicated defense system for adapting to environmental stresses and induce their stress proteins as a response against to several inputs, such as insecticides, microbial agents, extreme temperatures and etc. Heat shock proteins (HSP) are highly conserved chaperone proteins that are produced by cells in response to exposure to stressful conditions. HSPs are divided five families based on their molecular masses, including HSP60, HSP70, HSP90, HSP100, and small HSPs (sHSPs). sHSPs are numerous and omnipresent in almost all organisms that show chaperone-like activity with protecting cells from toxicity or preventing aggregation of target proteins. The Egyptian cotton leaf worm, *Spodoptera littoralis* (Boisd.) is one of the most destructive agricultural lepidopterous pests that cause economically important damage in a wide variety of crops including cotton, tobacco and corn in Mediterranean and Asian countries. In this study, we identified and characterized a transcript that is member of HSP family encoding small heat shock protein (*SplisHSP*) from the cDNA library of *S. littoralis* generated using 454 FLX Titanium Sequencing on the Roche platform. The deduced sequence of *SplisHsp* shares the highest homology with sHSPs from other Lepidopterans *Spodoptera litura*, *Helicoverpa armigera*, *Grapholita molesta*, *Danaus plexippus*. Moreover, we generated a phylogenetic analyses based on the protein sequences in order to give evolutionary insights into *SplisHSP* gene in *S. littoralis*.

Keywords: Small heat shock proteins, *Spodoptera littoralis*, transcriptome.

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Impacts of the New Metropolitan Municipality Law on Those Living in Rural Areas: The Case of Kocaeli

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Abstract

With the enactment of the Metropolitan Municipality Law no. 6360 in 2012, the service area of metropolitan municipalities was extended to the provincial administrative boundaries, without distinguishing between rural and urban areas in metropolises. Thus, the legal entity status of villages and towns in metropolises was abolished and they were transformed into districts. In the circumstances, the municipalities which had been previously delivering services to urban areas started to have new tasks such as delivering municipal services to districts that were previously villages as well as agricultural infrastructure services, livestock investments and supporting of breeding activities. The present study explores the impacts of the new metropolitan municipality law on those living in rural areas. The village of Nüzhetiye in Gölcük, Kocaeli was selected for this purpose. We asked the residents of Nüzhetiye, which had become a district with the enactment of the law in question, whether they were aware of the new law and whether they were affected positively or negatively. In light of the findings obtained, some recommendations are made in the final section.

Keywords: Metropolitan Municipality Law, rural area, agricultural activity, local administration, district



Differences of Some Soil Properties on the Land Use Change

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Abstract

The exploitation of natural resources is the use of natural resources and damage to the environment leads to rapid deterioration of the balance between natural resources and the environment in today. In our country, particularly in the Eastern Black Sea Region, the areas where agriculture can be done are limited, which causes the forest areas to be turned into agricultural areas. Increasing disruption of the capacity of these areas leads to the use of land outside the capability class. Land use change is one of the priority issues to be investigated especially in high slope and precipitation areas such as the selected research area. As a research area, was selected in the Eastern Black Sea Region, a basin on the Coruh River within the Artvin province borders of Turkey. It has been researched that how the different forms of land use and different aspect influence the some soil properties. For this purpose, a total of 48 soil samples were taken, representing two different land use types (12 forests, 12 agriculture), two different aspect (shady, sunny), 24 being disturbed and 24 being undisturbed samples to represent the research area. These soil samples taken from the research area were analyzed texture (sand, clay, dust ratio), permeability, bulk density, maximum water holding capacity, organic matter and pH. The effect of the variance of land use on soil characteristics was tested by multiple variance analysis. As a result, it has been determined that land use variability has significant effect on some soil properties, such as permeability, maximum water holding capacity and pH. Also, different aspect variability has significant effects on sand, clay, bulk density, pH and organic matter ($p < 0,05$).

Keywords: Land use types, aspect, soil properties, Artvin.

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Optimisation of Osmotic Dehydration of Red Pepper by Response Surface Methodology

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Abstract

Pepper (*Capsicum annuum* L.) is in the *Capsicum* genus of *Solanaceae* family as potato, tomato, tobacco and petunia. Peppers are used as whole or sliced, fresh, dried, cooked and canned in food industry. The pepper is a highly nutritional food due to vitamin A, B and C, pigments, flavonoid and antioxidant compound content. The peppers have an important role in human nutrition especially due to rich content of vitamin C and carotenoids, high fiber and unsaturated fat. Osmotic drying is a preliminary process and used to partially remove water from plant tissue by immersing the food in a hypertonic solution. It shortens the time during the additional drying therefore reduce the energy consumption and the quality losses. In this study, the effect of various parameters which are effective during osmotic drying of red peppers on water loss and solid gain were investigated. Osmotic dehydration treatments of red peppers were optimized by using response surface method according to Box-Behnken experimental design. Temperature (25°C, 40°C, 55°C), sorbitol/NaCl (1:1, 2:1, 3:1) and solution/raw material (5:1, 10:1, 15:1) ratio were chosen as independent variable and treatment was optimized to maximize water loss and minimize solid gain. Optimum processing conditions were determined as 25°C treatment temperature, 2,41 sorbitol/NaCl ratio and 15:1 solution ratio/raw material in this study. According to obtained data in experimental design, solid gain and water loss significantly increased with increasing osmotic solution temperature and sorbitol/NaCl ratio. The effect of solution/raw material ratio on water loss and solid gain of sliced red peppers was found to be statistically insignificant.

Keywords: *Capsicum annuum* L., osmotic drying, response surface methodology

Acknowledgments: This work was supported by the Scientific Research Projects Coordination Unit of Akdeniz University (Antalya, Turkey) [grant number: FYL-2015-616].



The Effect of Irrigation Water Quality on Pepper Yield Under Greenhouse Conditions.

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Abstract

Salt levels in irrigation water are crucial to determine irrigation water quality. The good quality irrigation water sources suitable for agriculture has been decreasing day by days. Determining of plant salt tolerances is necessary to obtain optimum yield and quality for present conditions. As it is well known, the salt tolerances of vegetable plants are lower than other plants. Therefore, it is required to determine yield and quality changes when the plants irrigated with the water which has different salinities especially vegetables. In this study, the effects of six irrigation water salinities and two irrigation water level on pepper plant yield quality were investigated. The experiment was conducted in the 36 pots including soil which has no salinity problem under greenhouse condition at Antalya region on 2015. The experiment was set up as a randomized block design with a factorial arrangement of salinity and water level factors in twelve treatment combinations and replicated three times. The electrical conductivity of the irrigation water salinity treatments were 0.75 dSm⁻¹ as control (T₁), 1.0(T₂), 1.5(T₃), 2.0(T₄), 2.5(T₅), and 5.0(T₆) dSm⁻¹. Irrigation water level treatments were designated as full irrigation (S₁, which received 100% of the soil water depletion) and deficit irrigation that received 75% of the amount received by treatment S₁ (S₂ treatment, 25% deficit irrigation). The soil water content was replenished to field capacity, when the 50 – 55% of available water content was consumed. Other treatment received less irrigation water according to applied water deficit on the same day. The maximum yield were obtained from the full irrigation with 0.75 dSm⁻¹water salinity treatment (T₁S₁) and 75% of full irrigation with 1.0 dSm⁻¹water salinity treatment while the minimum yield were obtained from T₆S₁ and T₆S₂ treatments, the salinity of which were the highest. The yield losses on these treatments were about 58%.

Keywords: Irrigation water quality, soil salinity, pepper, irrigation

Acknowledgement: This study was extracted from Master's degree study of Esra Aksan
*The authors thank S.U.B.A.P. (The Scientific Research Coordination Office of Selcuk University, Turkey) for kindly supporting the project No. BAP 15201061



Heavy Metal Concentrations In Seafood From Black Sea

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Abstract

Seafood is very important in human nutrition and it is recommended to consume regularly for a healthy diet. However, they have the potential to accumulate toxic metals when exposed to contaminated water. Heavy metals are not biodegradable, they can accumulate in the food chain and transfer to humans. These can be very harmful even at low concentrations and the effects of heavy metals on human health are of great importance today. Black Sea is an important fishing source for Bulgaria, Georgia, Romania, Russian Federation, Ukraine and Turkey. However, it is known that heavy metal pollution in the Black Sea is increasing due to marine transportation, ballast water, industrial, agricultural and municipal activities. For this reason, many researchers have investigated heavy metal concentrations in seafood caught from the Black Sea at different times. In our study, heavy metal concentrations detected by different researchers in seafood caught from various regions of the Black Sea were evaluated collectively. Thus, a comprehensive assessment was made on the suitability of the heavy metal concentration in seafood caught from the Black Sea to human consumption. Heavy metal concentrations in various fish and shellfish species caught from the Black Sea have been generally reported below the permissible levels, and they have been regarded as safe for consumption. However, the importance of periodic monitoring of heavy metal concentrations in seafood caught from the Black Sea is emphasized, as some individuals exceed the limits specifically for Pb and Cd.

Keywords: Heavy metal, Black Sea, seafood, fish



Mercury and Selenium Interaction in Fish

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Abstract

As a result of increased pollution with industrialization, seas and oceans are contaminated with mercury. Methylmercury (MeHg), the organic form of mercury, is highly toxic to humans and it has been regarded as an important public health concern. It is transferred via food chain and may accumulate in fish. Fish consumption is the most important source methylmercury for the public and high amounts of MeHg can cause a variety of adverse health effects in people. Large-scale food poisoning cases have been reported due to the consumption of mercury-contaminated fish. Fish is also an important source of dietary selenium which is an essential trace element for humans. Several studies have shown that selenium protects the organism from organic and inorganic mercury, due to the metabolic interactions. It has been suggested that selenium/mercury molar ratios above 1 provide great protection for numerous adverse effects of mercury. Therefore, the mutual antagonism between these two elements has become more important in fish and seafoods. In this study; mercury and selenium interaction in fish is highlighted. The results of studies made so far on mercury and selenium interaction in fish were evaluated in terms of public health and food safety. The studies in this area can provide beneficial insights into reducing the risks of fish consumption and ensuring more safe consumption for the public.

Keywords: Selenium, mercury, fish, seafood

Effects of Water Stress Applied at Different Growth Stages to Cotton Plant on Some Yield Parameters

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Abstract

The research was carried out in Amik Plain (Hatay) on “Carisma” type cotton plant based on factorial trial design in three replications. In the study, growth of cotton plant was divided into three different stages as: a) vegetative growth period, b) flowering and boll development period, and c) boll opening period. While at some stages of the growth water equivalent to the field capacity was applied (T), at some stages irrigation water was not supplied (O). In order to determine the effects of water stress on generative and vegetative characteristics of the plant; leaf area index, leaf moisture content, dry matter and yield parameters were measured in this study. The amount of irrigation water applied in the study changed between 1077.85 mm (TTT) and 407.29 mm (OTO), while evaporatranspiration rates changed between 1181.9 mm (TTT) and 433.4 (OTO). Regarding the non-irrigated treatment (OOO) evaporatranspiration was measured to be 303.4 mm. The yield value (499.8 kg da⁻¹) of the treatment fully irrigated at every period (TTT) was determined to be 351.2 kg da⁻¹ more in value than the non-irrigated treatment with yield value of 148.6 kg da⁻¹. Similarly the leaf area index increased by 220.4% while leaf moisture content increased by 14.6%. The amount of dry matter for TTT in the sampling carried out during the growth stages was 266.91 kg da⁻¹, 479.37 kg da⁻¹, 605.29 kg da⁻¹, and 956.97 kg da⁻¹, respectively. The proportional increase in the amount of dry matter for TTT treatment between the sampling stages was 79.60%, 26.27% and 58.10%, respectively.

Keywords: Cotton (*Gossypium Hirsutum* L.), Different growth stages, Vegative and generative characteristics, Water stress, Yield



Plant-Mediated Effects of Soil Amendment Using Arbuscular Mycorrhizal Fungi on Consumption Rate of Colorado Potato Beetle, *Leptinotarsa decemlineata* (Say) (Coleoptera: Chrysomelidae)*

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Abstract

The importance of soil microorganisms in terms of plant health is becoming clearer day by day. Symbiotic arbuscular mycorrhizal fungi (AMF) form a key component of the microbial populations influencing uptake of nutrient and plant growth. This study was carried out to determine if using AMF affects consumption rate of Colorado potato beetle (CPB), *Leptinotarsa decemlineata* (Say) (Coleoptera: Chrysomelidae). Two potato cultivars (*Granola*, *Vangogh*) and two strains of mycorrhiza (*Glomus intraradices*, *G. mosseae*) were used in the experiments. Consumption performance of first and fourth instar larvae and adults of CPB were investigated on potted potato plants treated with manure+AMF, synthetic fertilizer, and plants untreated. The study was carried out at 24±2°C, 60±10 % RH, and a photoperiod of 14:10 (L:D) h in climate room. As a result of the study, decreased consumption rate of CPB was obtained on potato plants treated with manure+AMF, especially amount of leaf area consumed by first instar larvae considerably declined when compared to the chemical fertilizer. Using different treatments resulted in differences in concentrations of minerals in potato leaves, and mineral content of potato leaves explained 40%, 32% and 28% for consumption rate of first instar larvae, fourth instar larvae and adults of CPB, respectively.

Keywords: *Leptinotarsa decemlineata*, arbuscular mycorrhizal fungi, consumption rate

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The Diffusion Kinetics of Potassium Sorbate from Active Polymer Films at Various Conditions

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Abstract

Determination of diffusion rate (D_{ps}) of antimicrobials (AN) from AN-active packaging film is important to estimate their activity. The pH and a_w values of the food products might be affective on the diffusivity. In the study, estimation of the effects of acidity (pH 3 for acidic, pH 5 for mid-acidic, and pH 7 for neutral foods) and a_w (most of the food products have a_w within the range of 0.65 and 0.95) on diffusion of potassium sorbate (PS) from an industrially produced multilayer active films (70 μm LPDE/PA/LPDE containing 4%PS) at 25°C were the main aims. The film samples were placed in different liquid mediums having different pH and a_w . The releases of PS from films were investigated in different pH and a_w values designed according to two factors face-centered central composite design of response surface method (RSM) using Design Expert program. HPLC method was used to determine the amount of PS that diffused out of the film through the liquid medium. The D_{ps} values of PS calculated according to Fick's 2nd law to observe the differences between diffusion rates were found to be between 3.46 and 9.62 x 10⁻¹⁴ cm²/s. The ANOVA and 3D response surface and 2D contour plots show that pH and a_w are effective factors in D_{ps} of PS from films and these two variables have an important interaction between them. The swelling of films within solution have higher a_w values could lead to enter the solution into films matrix more and give more change to touch PS, and finally due to the high solubility of PS at lower pH, the faster diffusion of PS might be occurred. It was interesting to note that, the diffusion of PS was the lowest at the pH 5-6 and a_w 0.80-0.95 among the others studied.

Keywords: Antimicrobial active films, diffusion kinetic, potassium sorbate, response surface methodology



Some Physical And Mechanical Properties Of Osb Panels Faced With High Pressure Laminate (HPL)

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Abstract

Oriented strand board (OSB) is especially used for flooring, roofing, wall covering, I-beams, box beams, insulation caravan, truck bodies, packaging boxes, and form boards for concrete. The use of OSB in furniture production is not common. In this study, both surfaces of OSB were covered with high pressure laminate (HPL) material using with thermoset based urea formaldehyde glue. It was aimed to spread that the usage of OSB in furniture production by using HPL materials produced in various colors and designs. The both surface of the OSB panels were faced with thin HPL laminate using UF glue under pressure and temperature in a hot press. The results showed that the mechanical and physical properties of OSB faced with the HPL material improved as compared to the control OSB panel. As an alternative to MDF and particleboard The OSB panels faced with the HPL material can be efficiently used in the furniture, in particular boards exposed to the loads.

Keywords: Oriented strand board, high pressure laminate



Heat Insulation Performances of Different Wooden Wall Profiles

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Abstract

In Turkey, energy is an import product and its supply is getting harder every day. About 46 billion m³ natural gas were used in 2016 and great deal of it was imported. For this reason, with the law that entered into force in 2011, it is obligatory to do heat insulations of all structures. Approximately 30% of the heat losses to the buildings occur from the walls. The heat losses from the walls are vary according to the regional differences and climatic conditions as well as structural members forming the wall and wall thicknesses. Wood is a natural heat insulation material because it has a very high coefficient of thermal resistance compared to alternative building materials. Walls of the wooden carcass structures occur combination of wood and wood based composite materials, which provide a significant advantage in terms of thermal insulation. In addition, different insulation materials that can be used in the wall profile can provide much more effective thermal insulation. In this study, heat losses in different regions of Turkey, Marmara Region, Black Sea Region, Mediterranean Region and Eastern Anatolia Region, different wood wall profiles and using different insulation materials were calculated for summer and winter seasons. Obtained values compared with the heat losses of concrete walls that reinforced with same insulation materials.

Keywords: Heat Insulation, wooden wall, wood buildings



Sticking and Caking Properties of Lactose

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Abstract

Lactose is a reducing disaccharide which composed of consists of the hexose sugars, glucose and galactose. Lactose is capable of existing in the following forms: 1. both α and β isomers of lactose in solution, 2. Amorphous lactose, 3. Crystalline lactose (both α and β anhydrous forms and as an α monohydrate), 4. A mixture of both amorphous lactose and crystalline. One of the mechanism of bulk lactose caking is humidity caking. When the lactose is exposed to high relative humidity enviroment, lactose caking occurs. Amorphous lactose can be found as either a glass or a rubber. The glass state can turn into rubbery state by increase in the ambient temperature at a constant moisture or water activity. At the above of glass transition temperature, flow can occur due to a reduced viscosity, which allows the formation of liquid bridges between contacting particles. This situation indicates the powder sticky and if it stores above the glass transition temperature for a long storage period, crystallisation can take place. Crystallisation results in the sample caked. When crystallisation occurs, moisture is released which may then be taken up by the rest of the powder, thus, starting sticking and following caking in the rest of the powder. During spray drying, amorphous lactose is formed when lactose in solution is dried quickly. The isotherm and glass transition temperature profile of amorphous lactose are the most important factors affecting sticking. Apart from lactose, dairy powders consist of other components. Therefore the properties of these other constituent need to be investigated. Sticking and caking properties are related to the moisture present in the powder through the glass transition temperature concept.

Keywords: Caking, sticking, lactose, dairy powders



Determination of prevalence of Mushroom (*Agaricus bisporus*) Green Mold Disease, caused by *Trichoderma* spp. in Korkuteli county of Antalya in Turkey

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Abstract

The county of Korkuteli in Antalya is an important role in terms of mushroom and compost production in Turkey. Korkuteli is a mushroom and compost centre of Turkey. Total amount of mushroom production of the county is 18500 ton/year and is the biggest mushroom producing county of Turkey. Some of the mushroom diseases are commonly seen and limits the mushroom production. Green Mold Disease was observed as the most common disease of mushroom in all growing areas surveyed in 2015-2016 growing season of mushroom in Korkuteli. *Trichoderma* spp. are seen mostly in the colonization stage of *Agaricus bisporus* and covers almost the compost surface and strongly limits the colonization of the *A. bisporus* within the compost. This causes important yield losses of mushroom production in the county. The eighty eight mushroom producers located in Korkuteli centre, Datköy, Küçük Köy, Büyük Köy, İmrahor, Sülekler, Yelten and Yeşil Yayla were surveyed for mushroom diseases. Based on the culturing on growth media and microscopic examination, Green Mold Disease was diagnosed in the rate of 85.22%. The disease was commonly observed in the mushroom producing areas that do not pay attention hygienic rules and use compost with inadequate sterilization.

Keywords: Green Mold, Korkuteli, Mushroom, *Trichoderma* spp.

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Tüketicilerin Un-Unlu Mamullerin Tüketimi ve Tüketimini Etkileyen Faktörlerin Belirlemesi (Amasya İli Suluova İlçesi Örneği)

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Özet

Türkiye’de tahıllar içinde en fazla ekim alanı buğdaya ayrılmıştır. Son yıllarda gıda güvenliği, insan sağlığı gibi konular ön plana çıkınca buğdayın önemi daha da artmıştır. Unlu mamul denildiğinde, ya tüketime hazır ya da ön işlem uygulanmış ve sonradan ek bazı işlemlerle tüketilebilecek duruma gelebilen ve hububat unlarından elde edilen pişirilmiş ürünler anlaşılmaktadır. Türkiye genelinde un ve unlu ürünler tüketimiyle ilgili sınırlı sayıda çalışma yapılmış olmakla birlikte, araştırma alanı olarak seçilen Amasya ilinde ise konu ile ilgili bir çalışmaya rastlanılmamıştır. Bu nedenle araştırma konusu orijinal niteliktedir ve önemlidir. Yapılan bu çalışmada, Amasya İli Suluova ilçesinde yaşayan, oransal örnekleme yardımı ile hesaplanan 378 bireyin ekmek tüketim durumları ekmek türleri itibarıyla incelenmiş, ailelerin tükettikleri ekmek türlerini tercih nedenleri ve satın alırken dikkat ettikleri hususlar da irdelenmiştir. Bireylerin bilinç düzeyi belirlenip, ekmek tüketimini etkileyen sosyo-ekonomik değişkenler istatistiksel testler sonucu ortaya konulmuş, konulan bu sonuçlar doğrultusunda gerekli önerilerde bulunulacaktır.

Anahtar Kelimeler: Bilinç Düzeyi, Ekmek Tüketimi, Davranış, Tutum



Effect of Design on Furniture Strength

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Abstract

Furniture constructions has been constructed different ways by using wooden material, joint material and joint technique. Furniture strengths differ with regard to combination of all materials used in construction. However, joints are most critical members in terms of furniture static as in all other construction. About 10000 joint techniques and joint materials has been used for furniture production. Every technique has different strength value. Many studies have been carried out in the world in order to determine joint strength of furniture and studies are still ongoing. In this study, the researches about the effect of commonly used joint techniques in furniture production on the strength of products have been analyzed and results were summarized. The performance of these joint techniques were determine with the comparison of all examined techniques.

Keywords: Furniture, Joint

Insecticidal and Grain-Protecting Properties of A Pyrethrum-Based Product Against Stored Maize Weevil, *Sitophilus Zeamais* (Coleoptera: Curculionidae)

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Abstract

In Rwanda, management of stored maize insect pests is based on conventional chemical insecticide applications with high residues. Organic pesticides containing pyrethrins like Agrothrin[®] (Dusting powder, Agropharm Ltd., Kigali, Rwanda) containing 0.11% pyrethrins, 1.1% piperonyl butoxide (PBO) synergist (w/w), a natural extract from the African pyrethrums with no side effects, can be a suitable option for managing stored maize. The present study was conducted to determine insecticidal and grain-protecting properties of Agrothrin against the maize weevil, *Sitophilus zeamais* Motschulsky (Coleoptera: Curculionidae), under both laboratory (controlled) and warehouse (non-controlled) conditions. The product was tested at seven different doses ranging from 0.9 kg/ton to 2.1 kg/ton and compared with an untreated control (control⁻) and a conventional chemical insecticide control (malathion, control⁺). The results from the study revealed that insecticidal activity of Agrothrin was low and not quick but it was more than doing nothing because it caused mortalities more than 95% of artificially introduced insects after 5 and 6 weeks. However, higher doses superior to 1.7 kg/ton and/or longer exposures than 4 weeks were needed to obtain an adult mortality more than 95%. In addition, Agrothrin gave effective grain protection against *S. zeamais* and the insects were predominantly present in positive and negative controls but absent or in low number in grains treated with Agrothrin. This indicates that the product can be used as an effective grain protectant for newly harvested maize grains before storage. Overall results suggest that Agrothrin may be a very effective alternative to the existing conventional chemical insecticides in stored maize protection at doses equal to or higher than 1.7 kg/ton of grain.

Keywords: Stored maize; chemical control; pyrethrum; powder; maize weevil.

Detection of *Verticillium dahliae* Kleb. Isolates Obtained from Grafted Eggplants

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Abstract

Verticillium wilt caused by soil-borne pathogen, *Verticillium dahliae* Kleb., is one of the most destructive and economically important disease of eggplants worldwide. Grafting eggplant technique onto resistant rootstocks is one of the most efficient way to control of the disease in the greenhouses. However, the pathogen can also cause the disease on grafted plants and reduce to yield dramatically. Therefore, population structure of the pathogen should be investigated to develop resistant cultivars and rootstocks for grafting cultivation. For this purpose, the population and race structure of *V. dahliae* isolates obtained from greenhouse-grown grafted eggplants in the Antalya district were determined via molecular technique. The fungi were isolated from infected eggplant samples collected from 54 greenhouses at 20 different sites in Aksu, Alanya, Finike, Gazipaşa, Konyaaltı, Kumluca, Manavgat districts. The pathogen was detected in 30 greenhouses in 11 sites from all districts except Manavgat. PCR analysis for *V. dahlia* race-1 with specific primers VdTr1 and VdTr2 did not produce any PCR products for all isolates. This result showed that the isolates did not belong to *race-1*. In conclusion, it can be assumed that the isolates most probably belonged to *race-2* or a non-identified other race group.

Keywords: Grafted eggplant, isolate, *Verticillium dahliae*, race, PCR.

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Molecular Characterization of *Verticillium dahliae* Kleb. Isolates from Greenhouse-Grown Grafted Eggplants in Antalya Province (South-Western Part of Turkey)

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Abstract

Verticillium dahliae Kleb. is one of the most important diseases of eggplants in the world. The use of various eggplant varieties grafted onto resistant rootstocks is a common and efficient practice to control the disease. But, the disease causes serious and economically important losses every year in the greenhouse-grown grafted eggplants in Antalya province. For this purpose, 30 *V. dahliae* isolates were collected from greenhouse-grown grafted eggplants in different localities of Antalya province and were amplified in PCR assays using DB19/DB22 primer pairs. The sequence analysis of *V. dahliae* SSMG regions revealed that the isolates from grafted eggplants had sequences of 526 and 542 base pair lengths and formed two different population groups named; Group 1 and 2, respectively. The sequences obtained from the present study were compared with those of the different plants in the Genbank. Twenty four *V. dahliae* isolates had a sequence of 526 bp and similarly with olive isolates on the other and six isolates had a sequence of 542 bp and were similar to cotton isolates. Phylogenetic analysis of *V. dahliae* both SSMG and IGS sequences revealed that isolates from eggplants fall into 2 different groups. Some of the isolates from Group-1 were found to be more closely related to race-2 tomato isolates whereas the rest of isolates from the same group were phylogenetically distant from race-1 and race-2 tomato isolates compared to the isolates of Group-2. In conclusion, olive or cotton plants should have been grown before in some parts of the greenhouse area in Antalya province and the *V. dahliae* isolates collected from eggplants may come from the same genetic origins of those related to olive and cotton plants.

Keywords: Eggplant, Grafted, *Verticillium Dahliae*, Phylogenetic analyse, PCR.

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Camel Milk and Milk Products

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Abstract

The camel milk is becoming popular due to its claimed therapeutic property. Camel milk is opaque white in color with normal odor and salty taste. According to Food and Agriculture Organization (FAO) there are about 22 million camels in the World. The countries with the highest numbers of dairy camels are Somalia, Mali, Ethiopia, Niger and Saudi Arabia. The pH of milk is between 6.5–6.7. In fat, protein, lactose, ash and total solids in camel milk is 4.9%, 3.7%, 5.1%, 0.7% and 14.4%, respectively. Camel milk contains a high proportion of antibacterial substances and higher concentration of vitamin C, potassium, iron Camel milk has also been used therapeutically against certain types of cancer, diabetes, colitis, autism and Crohn's disease. It can be considered an option for individuals who intolerant to lactose and children allergic to cow milk. Camel milk products have an important role in the diet of the population in rural areas of Africa, Asia and the Middle East. Suusac and garris (Kenya) are fermented camel milk products in Kenya, Somalia and Sudan. In Ethiopia, Pastoralists produce different fermented camel milk products such as dhanaan which is produced by pastoralists in Somali Region and ititu is produced in the eastern part of Ethiopia. In Mongolia “Tarag” is a cultured milk product similar to yohurt, while “Unda” is a product produced by lactic and alcohol fermentation of camel milk. “Khoa” is made by evaporating small amounts of milk over a hot, steady fire. “Rabbri” is also made by heating milk in a shallow iron pan over a hot fire. “Malai” is made by allowing large quantities of milk to simmer gently over a steady fire until a thick layer of milk fat and coagulated proteins forms on the surface. Camel dairy products; Zabadi(Sudan), Domiati cheese (Egypt), Caravane cheese(Mauritania), Chal (Kazakhstan, Turkmenistan)

Keywords: Camel, camel milk, production, camel milk products

Oviposition Deterrent Activity of Some Plant Oils Against Winterform Females of Pear Psylla, *Cacopsylla pyri* (L.) (Hemiptera: Psyllidae)

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Abstract

Oviposition deterrents have the potential to prevent arthropod pest infestations and are important materials used for controlling many pests in integrated pest management (IPM) programs applied in agrosystems. They are management tools that make the crop habitat less or no favorable for pests to settle, lay eggs, feed and even to survive. In the present study, seed oils of the Safflower [*Carthamus tinctorius* L. (Asteraceae)] and the Castor oil plant [*Ricinus communis* L. (Euphorbiaceae)] were evaluated for their oviposition detergency against the winterform females of pear psylla, *Cacopsylla pyri* (L.) (Hemiptera: Psyllidae), the most important insect pest of pears in Turkey. In the field trials carried out in 2015 and 2016, both oils were used at a dose of 1 L/100 L water (0.1% Tween-20 was added for a good mixture) and applied at the dormant period (just before the first eggs were deposited by overwintered females). The control plots were sprayed with tap water including Tween-20 (0.1%). Only one application was made each year. Oviposition detergency was evaluated by counts of eggs deposited by overwintered females on treated dormant shoots or spurs taken during the sampling times (the 3rd, 7th, 14th, 21st and 28th days after application). The results from the study revealed that a significant reduction in the total number of eggs laid by winterform females was observed in the oil-treated plots compared to the controls. Both oils exhibited strong oviposition deterrent activity for winterform females of *C. pyri*, and the detergency was 100% during the 3-week period. Even after 4 weeks, the oviposition deterrent effect of both oils was higher than 70%. In the control plots, the first eggs were deposited by overwintered females 3 days after application. These findings suggest that both oils are promising oviposition deterrents against winterform females of *C. pyri*.

Keywords: Oviposition deterrents; detergency; plant oils; pear psylla.

The Effects of Nitrogen and Phosphorus Fertilization on Botanical Composition of Pasture

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Abstract

This research was conducted to determine the effects of nitrogen and phosphorus on botanical composition of rangelands in Burdur between 2014 and 2015 years. Five different N doses (0, 30, 60, 90 and 120 kg ha⁻¹) and three different P doses (0, 50 and 100 kg ha⁻¹) were applied in this research. This research was conducted in randomized block design with three replication. The grass ratio, legume ratio and the other families ratios in botanical composition were determined. Nitrogen and phosphorus applications significantly affected botanical composition. According to results of two years, nitrogen applications increased grass ratio while it decreased legume and other families ratios in botanical composition. Phosphorus applications increased legume and other families ratios, while it decreased grass ratios in botanical composition.

Keywords: Pasture, botanical composition, legume ratio, grass ratio.



Determination of The Mineral Content in Yoghurt Whey*

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Abstract

Strained yogurt is an indispensable flavor of traditional Turkish and Anatolian food culture, and one of its oldest and most important elements. The basic principle of strained yogurt production is to reduce the water content and increase product longevity by removing the serum. During strained yogurt production, about 33% of yogurt is kept in the straining bag, and 67% of yogurt is drained off as serum. This study aims to determine the mineral content in yogurt whey, one of the main pollutants in the dairy industry. Yogurt whey samples were obtained from strained yogurt processing facilities in Burdur. Calcium, potassium, phosphorus, sodium and magnesium quantities were determined by simultaneous inductively coupled plasma optical emission spectrometry (ICP-OES). The average fat, protein, lactose, dry matter, ash and pH values of these samples were found to be, 0.36%, 0.73%, 3.68%, 5.57%, 0.383% and 4.21, respectively. In these samples, Ca was 934 ± 130 mg/L, Mg was 969 ± 257 mg/L, K was 1257 ± 159 , Na was 940 ± 104 mg/L, and P was 157 ± 23 mg/L. In conclusion, serum dry matter consists of about 9% protein and fat and about 91% minerals and lactose. Therefore, the pollution caused by the organic load of yogurt whey when it is discharged into the environment can be prevented, and yogurt whey can be used as auxiliary matter in production of dairy products and other nutrients by recycling its nutrients using technological methods, as is done with cheese whey.

Keywords: Yogurt, yogurt whey, mineral content,

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THE FLORET STRUCTURE OF WOLF BERRY AND ITS FECUNDATION BIOLOGY

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Abstract

Wolf berry is classified taxonomically as in the *Solanaceae* family of *Lycium* genus and as a kind of *Lycium barbarum*, *L. chinense* and *L. ruthenicum*. Although these three kinds produced and consumed widely in China, have some similar morphological characteristics, these morphological are also important in making difference between these three types. *Lycium*, consisting almost 80 kinds, is extending in tropical and subtropical areas of the world. The plants belonging to *Lycium* genus are in the form of brier patch. They can reach 1 to 4 meters height. They are small, narrow and thick-walled, collated in the form of alternate and sometimes fascicular. Florets blossom as one or as a group. Petals, funnel shape or bell shape, can have the colour of white, green and purple. Fruits consisting a few or more seeds have two carpels and are usually in the form of thick-walled and watery. And also they are red, orange, yellow or black. Most of *Lycium* genus consist more than ten seeds, while some American types yield hard fruits with two seeds. Most of the *Lycium* kind is monoic plant yielding androgyne florets with its functional male and female parts, but some of them are dioic. Wolf berry is a perennial glasswort dropping leaves. It can endure climatic and environmental changes. Through its sophisticated root system, it can obtain necessary nutrients from the soil. With its taproot, the root of it can reach up to 40 meters.

Keywords: Wolf berry, floret, fecundation

CONSERVATION AND MARKETING OF BERRY FRUITS

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Abstract

When we talk about berry fruits raspberry, blacberry, ribes, gooseberry, rosehip, hippophae and related genres come more to mind. Berry fruits that both producers and consumers need must be met during all the year. Berry fruits harvested in specific time of the year in order to meet this demand are conserved by freezing anda re marketed after processed. Berry fruits are used in food industry such as jam, marmelade, fruit juice and in dairy products as well as in icecream, sugar and cake, and they are directly consumed by consumers. Because their conservation after harvest is harder when compered to other fruit types, and long-term conservation in cold storage is not likely, they must be conserved by freezing. After conserved by freezing, they can be used for year-long both by consumers and producers. Their conservation and marketing are of great importance in order for berry fruits to meet the demand as other fruits do. In this study, some information will be presented on conservation and marketing of berry fruits.

Keywords: Berry fruits, Marketing, Conservation.



Futurism at Agriculture and Food

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Abstract

Futurism is known as the movement that emerged in Italy in the early 20th century and emphasized dynamism and revolution in art. The futurists rejected the all old things that remain, and they considered speed and mobility as essential elements. This movement later influenced all artistic branches and indirectly science and technology. Many innovations have occurred technologically as a result of the studies needed to feed the world population which is expected to be 9 billion by 2050. Many new technologies compared to past centuries have begun to be used for food production industry from production to processing. While decreased agricultural land generated innovations such as skyscraper or underwater farming , on the other hand artificial meat was obtained in the laboratory. And even, the starting to be printed on 3D printers of foods obtaining from the farmland gave a different dimension to the subject. The applications and/or telephone apparatuses written by the introduction of smart phones into our lives made it possible to perform a mini analysis of the food on the dish. In this study, it was tried to summarize the futuristic approaches that started with the technological possibilities of the present and expected in the coming years for the food products obtained by agricultural activities, processing of raw materials, the consumption of products and the quality analysis of food.

Keywords: Futurism, Agriculture, Food



Futurism at Agriculture and Food

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Abstract

Futurism is known as the movement that emerged in Italy in the early 20th century and emphasized dynamism and revolution in art. The futurists rejected the all old things that remain, and they considered speed and mobility as essential elements. This movement later influenced all artistic branches and indirectly science and technology. Many innovations have occurred technologically as a result of the studies needed to feed the world population which is expected to be 9 billion by 2050. Many new technologies compared to past centuries have begun to be used for food production industry from production to processing. While decreased agricultural land generated innovations such as skyscraper or underwater farming , on the other hand artificial meat was obtained in the laboratory. And even, the starting to be printed on 3D printers of foods obtaining from the farmland gave a different dimension to the subject. The applications and/or telephone apparatuses written by the introduction of smart phones into our lives made it possible to perform a mini analysis of the food on the dish. In this study, it was tried to summarize the futuristic approaches that started with the technological possibilities of the present and expected in the coming years for the food products obtained by agricultural activities, processing of raw materials, the consumption of products and the quality analysis of food.

Keywords: Futurism, Agriculture, Food

Suitability Of *Camelus dromedarius* (Camel) Chymosin As A Coagulant For White Cheese

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Abstract

Rennet is a mixture of multiple enzymes (chymosin, pepsin and a small amount of lipase) produced in mammals' abomasum. Basic component of rennet mixture is chymosin that is main agent responsible for coagulation of milk casein. Novel enzyme sources such as microbial chymosin are currently being used to create alternative sources of the enzyme to supply the shortage of rennet obtained from suckling calves. The aim of this study is to investigate suitability of camel chymosin as a new source of coagulant for white cheese making. The suitability of camel chymosin for white cheese production was evaluated by comparing the physico-chemical and sensory characteristics of the cheeses produced by both commercial calf chymosin and camel chymosin. Physico-chemical analyses results were shown that there were no difference between pH (5.81 ± 0.002) and titratable acidity (0.179 ± 0.03) of the both cheeses at the first day of production. The pH values were gradually decreased during 90 day of storage and reached to 4.6 ± 0.005 in the cheese produced using commercial calf chymosin (CaC) and decreased to 4.88 ± 0.025 in samples produced by using camel chymosin (CC). Titratable acidity of the CaC samples were increased to 0.91 ± 0.05 % and increased to 0.74 ± 0.04 % in CC samples. There were no difference between the protein values of CC and CaC samples ($p>0.05$). Dry matter of cheese was greater in CC samples ($46,89\pm 0,03$) in comparison to CaC samples ($40,91\pm 0,319$) at the beginning of the storage. CC samples were displayed better odor and taste properties than CaC samples. The inner and outer appearance of CC samples were superior to CaC samples at all stages of storage. Sensorial analyses revealed that the average textural properties of CC samples were 4.66 ± 0.02 and 4.28 ± 0.002 for CaC samples out of 5. According to obtained physico-chemical and sensory analyses' results; camel chymosin was considered as a potentially suitable coagulant for white cheese production. It can be evaluated as a valid alternative to the milk coagulant enzymes presently available in the market.

Keywords: Camel, Calf, Chymosin, White cheese



Effects of Liquid Fertilizer Application on Yield and Quality Traits of Bread Wheat (*Triticum aestivum* L.)

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Abstract

Wheat is most cultivated cereal species and its production is around 729 million tons worldwide. Granule and liquid fertilization in wheat have vital role to achieve higher yield and protein quality especially for high-input agriculture so different fertilization regimes have been applied for this purpose. Although granule fertilization in wheat cultivation is commonly applied in twice such as sowing and tillering, it is known that additional liquid fertilization applications in different growth stages can increase grain yield and quality of wheat. For this purpose, we aimed to determine effects of organic and inorganic foliar fertilizers applied in different growth stages on yield and quality traits of bread wheat beside granule application. Cv. Sagittario, which is common cultivated bread wheat cultivar in Turkey, was used as genetic material and field trials were conducted in randomized complete blocks with three replicates in two different locations such as Döşemealtı and Konyaaltı of Antalya province in 2015-2016 growing season. In addition to grain yield (kg/da), seven agronomic traits such as plant height (cm), days to flowering, days to maturity, number of spikes per square meter, spike weight (g), biological yield (kg/da) and harvest index (%) and quality traits such as protein content (%), grain moisture (%), volume weight (kg), mini SDS (ml), gluten content (%) and gluten index (%) were observed. According to variance analysis results, there was no statistically important difference ($p < 0.05$) in Döşemealtı location for all observed agronomic traits while plant height and grain yield were found statistically important at 0.05 level in Konyaaltı location. Similarly, only protein content was found important in Konyaaltı whereas gluten content was found important in Döşemealtı. The results showed that foliar fertilization in different growth stages can affect the yield and quality traits of bread wheat at some experiments.

Keywords: Wheat, yield, yield components, protein, quality traits, foliar fertilizers

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DANGERS AND RISK IN THE WORKPLACE

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Abstract

A substantial part of human life span is spent in the workplace. Favorable working conditions demanded from businesses are of great importance both in terms of worker's healty and safety and work efficiency. Although the adverse effects of dangers and risks caused by imporer working conditions are well-acknowledged, a meaningful assessment and control generally haven't been given sufficient significance by businesses, espacially the ones in devoloping countries. The persistence of unhealthy or imporerworking milve expert on adverse influence on worker's healty, safety and efficiency and the enviromental factors that come out in the workplace, cause ailment and distort the welfare.

Keywords: Work healty, work safety, working environment



Recent Developments on the Gluten-Free Bread Production for Celiac Patients

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Abstract

"Celiac" is a genetic disease seen in people that have the inability to digest prolamins that are a constituent of gluten proteins in the small intestine. As well known, gluten is a protein complex consisting of two different fractions of wheat that are glutenin and gliadin, which are responsible for forming the viscoelastic structure of bread. Carbon dioxide and gluten interaction play the most important role in the development of volume and textural structure of bread by producing by yeast during fermentation and its trapped in the gluten network and forms the final texture of bread. As a genetic disease, today, the only accepted treatment for celiac is removal of the possible gluten sources such as wheat, barley, and rye from the diet (lifelong gluten-free diet). The consumer demand for gluten-free products that are high quality food products not containing wheat, barley or rye has increased significantly after the occurrence of celiac and because of some popular gluten-free diets. Gluten-free cereals such as corn, sorghum, millet or pseudo-cereals were used for the production of gluten-free products commercially. Along with them, some new pseudo-cereals such as buckwheat, quinoa and amaranth are considered good sources for gluten free products because of high nutritional composition such as essential amino acids, fatty acids, high content in minerals and vitamins (e.g., vitamin B) and more importantly pseudo-cereals do not contain any toxic prolamins for celiac patients. Moreover by using such these pseudo-cereals, the textural and nutritional deficiencies of gluten-free breads such as poor content B vitamins, protein, lipid, low quality, sensory and textural properties comparing to wheat breads can be minimized and the quality properties of gluten-free breads can be improved. This review presents studies on the usage of new pseudo-cereals in production of gluten-free breads and effects on the bread quality.

Keywords: Gluten-free, celiac, pseudo-cereals

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Red Meat Consumption in Turkey: Problems and Suggestions

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Abstract

In this study, red meat consumption in Turkey is discussed in terms of population, income level, red meat prices, prices of substitute products and changes in consumer preferences. Problems related to red meat consumption are; livestock sector, red meat processing industry, developments in imports, food safety and preferences. According to the study, consumption of red meat in Turkey is not at the desired level, considering the population structure. The main problem is the high retail prices. To this end, solutions should be developed in a holistic approach to the problems that arise during the red meat supply chain.

Keywords: Red meat, consumption, self-sufficiency, price.



Determination of Agricultural Mechanization Level Using Geographic Information System as in the Example of Kırşehir

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Abstract

The objective of this study is to determine the core values and key relations related to agricultural mechanization level spatially. The survey study to be conducted in Kırşehir will include sizes and numbers of farm fields, production pattern, numbers, models, power groups of tractors and equipment used with. CBS software will be used to analyze the data provided from surveys and GPS device that will be used to determine the location of the production fields. In order to provide solutions about improving agricultural mechanization level this project will be including promising information. In this context, creating such a database can be updated and further developed for management and decision making process.

Keywords: Agricultural Mechanization, Geographic Information System, Kırşehir

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Effects of Humic Acid Pretreatment on Some Physiological and Anatomical Parameters in Barley (*Hordeum vulgare* L.) Exposed to Salinity

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Abstract

In this work, the effects of humic acid (HA) pretreatment on the seed germination, seedling growth (coleoptile percentage, radicle length, coleoptile length, radicle number and fresh weight) and leaf anatomy of barley under both normal and saline conditions were studied. HA application partly reduced the germination percentage, coleoptile percentage, radicle length, radicle number and fresh weight of barley germinated under normal conditions while it statistically showed the same effect as the control on the coleoptile length. In parallel with concentration rise, salt considerably inhibited the seed germination and seedling growth of barley. Whereas, the inhibitive effects of salt on the seed germination and seedling growth were dramatically alleviated in varying degrees by HA pretreatment. Moreover, salinity of the medium caused changes in the leaf anatomy of barley seedlings. HA affected in different degrees the various parameters of leaf anatomy of barley seedlings grown in both normal and saline conditions, and this difference was statistically important.

Keywords: Barley, Germination, Humic acid, Leaf anatomy, Salinity, Seedling growth



Comparison Proximate Composition Between Concrete And Ground Pond Aquacultured Rainbow Trout (*Oncorhynchus mykiss*) Systems

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Abstract

This research is conducted to perform proximate composition of the effects of pond types made with concrete and ground materials. It is known that some of consumers prefer to ground pond aquacultured rainbow trout when others prefer concrete pond. According to common opinions, ground ponds gave better results in tasting. Fish samples fresh aquacultured rainbow trout (*O. mykiss*) was obtained from two different aquaculture farm located on Niğde of Turkey (Ecemiş company for concrete pond, Özyurt company for ground pond). Aquacultured fishes were fed with pellet feed for 6 months. The average weight and length of the both samples were 253.976 ± 2.72 g and 27.21 ± 1.32 cm, respectively. Fish were killed by hitting on head and delivered to the laboratory in ice within 6 h of harvesting. After proximate analyses results showed that significant differences were observed ($p < 0.05$) in the protein, lipid and moisture contents of fish except ash content. Ground pond rainbow trout contained $22.43 \pm 0.25\%$ protein whereas the protein content of concrete pond rainbow trout was $19.160 \pm 0.45\%$. Lipid content was higher ($6.62 \pm 0.61\%$) in ground pond fish than concrete pond fish ($4.15 \pm 0.22\%$). Concrete pond rainbow trout had significantly higher moisture content ($75.28 \pm 1.13\%$) compared to ground pond fish (69.56 ± 0.25), whilst they had similar ash content (1.41 ± 0.03 vs $1.39 \pm 0.01\%$).

Keywords: Concrete pond aquaculture, Ground pond aquaculture, Trout proximate

(This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: KMY.E2.17.002)

Determination of Antioxidant Capacity and Total Phenolic Matter of *Salvia candidissima* walh.

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Abstract

This study was designed to examine the *in-vitro* antioxidant activities of the methanol extract of *Salvia candidissima* walh.. Free radical reduction (scavenging), iron reduction power (FRAP), copper reduction power (CUPRAC) and free radical cations reduction (TEAC), total phenolic (TP) and total flavonoids (TF) tests were performed. Antioxidant activities of BHT, BHA, and α -tocopherol were determined in parallel experiments. DPPH radical power scavining activity of methanol extract was exhibited the weak antioxidant activity $IC_{50}=22.96\pm 0.45$ ($\mu\text{g/mL}$). The antioxidant activity of extract, FRAP 1.20 ± 0.16 mmol TE/g extract, CUPRAC 3.30 ± 0.12 mmol TE/g extract and TEAC 9.25 ± 0.40 IC_{50} ($\mu\text{g/mL}$) were determined. Total phenolic and total flavonoid of *Salvia candidissima* walh was determined to be extract content 83.53 ± 5.92 mg GAE / g of extract and 59.02 ± 3.59 QA /g, respectively. Our results showed it was observed remarkable antioxidant activity of *Salvia candidissima* walh.

Keywords: *Salvia candidissima* walh, antioxidant, phenolic, flavonoid

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Fibroblast Growth Factor-2 and Vascular Endothelial Growth Factor Expression In The Ileocecal Region of Quail (*Coturnix Coturnix Japonica*)

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Abstract

We undertook this study to immunolocalize in quail vascular endothelial growth factor (VEGF) and fibroblast growth factor (FGF-2) in the ileocecal region, which is a significant entry point for intestinal immunity. Diffuse cytoplasmic reaction for FGF-2 and VEGF was observed in the epithelial cells of the distal ileum and proximal cecal mucosa. VEGF immunoreactive cells, which give strong intracytoplasmic immunoreaction, were observed in the lamina propria of both intestinal parts. FGF-2 immunoreactive cells were seen in the lamina propria and germinative centers of lymph follicles in the cecum mucosa. Expressions of FGF-2 and VEGF in healthy quail intestines indicate that these factors have physiological roles in quail.

Keywords: expression, FGF-2, ileocecal region, quail, VEGF

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Determination of Morphological Characteristics of the Wetland Sediments Inekli, Azapli and Golbasi Lakes in the Eastern Mediterranean Region

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Abstract

In this study, the most important wetlands in the Golbasi Depression in the Eastern Anatolian Fault Zone, morphological features of the Golbasi Lakes (Inekli, Azapli and Golbasi Lakes) have been examined. The lake, the water is sweet, but not suitable for drinking, because of included in the karstic tectonic lakes group in terms of formation. The extension of the lake, is east-west direction, it is seen that there is plateau area after the plain area is found to the south. This area, to determine for morphological characteristics, soil profiles were opened at 13 different locations. Inekli-1, Inekli-7, Azapli-1, Azapli-4 and Golbasi-1 profiles, on the ground formed on the main materials formed around the Golbasi Lakes, and Inekli-2, Inekli-3, Inekli-4, Inekli-5, Inekli-6, Azapli-2, Azapli-3 opened on materials that were transported to the lake area were profiles between Azapli and Golbasi Lakes. The soil colors of 43 soil horizons in each professor were determined dry and wet by using Munsell color scale, soil structures were investigated and the hardness, tackiness and plasticity properties of the soil were determined by the findings of this study.

Keywords: Golbasi Depression, wetland, soil, morphological property

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Determination of Adenosine Deaminase and Acid Alpha Naphthyl Acetate Esterase Enzyme Activity of Kilis Goats

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Abstract

We examined alpha naphthyl acetate esterase and adenosine deaminase enzyme activity in peripheral blood of kilis goat. Our aim was to determine the percentage of ANAE positive lymphocytes and Adenosine Deaminase (ADA) measurements. The proportion of ANAE positive lymphocytes was determined to be 66%, ADA activity was determined to be $15.0 \pm 1.15 \text{ U L}^{-1}$. While, T lymphocytes showed an ANAE positive reaction, the eosinophil granulocytes, neutrophil granulocytes and monocytes also, showed a positive reaction. The reaction observed in T lymphocytes was a red-brown coloration, usually 1-2 granules, but enough small granules to fill the cytoplasm were detected rarely.

Keywords: ADA, ANAE, peripheral blood, Kilis goat

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Differences of Essential Element and Heavy Metal Levels in Milk of Dairy Donkeys, Goats, and Sheeps

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Abstract

The aim of this trial was to determined the concentrations of Na (Sodium), Mg (Magnesium), P (Phosphorus), K (Potassium), Ca (Calcium), Fe (Iron), Cu (Copper), Zn (Zinc), Ni (Nickel), Cd (Cadmium), V (Vanadium), and Ba (Barium) in donkey, goat, and sheep milk. Fifty-six individual milk samples were collected from 17 lactating donkeys, 19 goats, and 20 sheeps in three different Turkish Farms. The samples were analyzed bu inductively coupled plasma - mass spectrometer (ICP-MS). Minimum and maximum levels of Na, Mg, P, K, Ca, Fe, Cu, Zn in donkey milk are 108.6-202.7, 48.6-76.0, 355-670, 565-1053, 279-637, 1.86-5.80, 0.052-0.277, 1.78-10.97 mg/L; in goat milk are 201.7-1087.0, 81.7-138.8, 818-1132, 972-1802, 678-1323, 1.91-4.48, 0.052-0.576, 1.72-4.68 mg/L; in sheep milk are 219.0-640.5, 119.7-238.9, 946-1895, 881-1474, 1103-1962, 2.83-4.72, 0.032-0.719, 1.52-6.68 mg/L, respectively. This results indicated that the concentrations of macro elements in donkey milk are lower when we compared with goat and sheep milks. Heavy metal concentrations of both donkey, goat, and sheep milks are similar and lower than the detection limit of <1ppb.

Keywords: Essential element, heavy metal, donkey milk, goat milk, sheep milk, ICP-MS

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The Use of Fuzzy Logic Modelling in Time Series for Animal Production

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Abstract

Although the life of human being is full of uncertainty, statistics and probability theory work with accurate data. In order to get some results from an uncertainty, fuzzy logic modeling has been proposed as an alternative to Aristotle logic (0.1). Numerical and verbal expressions are used simultaneously in fuzzy logic. This benefit and the benefit of using partial membership system have been encouraged the use of fuzzy logic in all engineering fields. Fuzzy logic theory has made rapid development in recent decades, since it operates according to the principle of human brain and produces valuable results. Because of these excellent properties, fuzzy logic has been used in recent years in the agricultural field. In this study, two different sets of data are analysed by using fuzzy logic techniques. Different membership functions are used in the analysis, and the results were examined and interpreted. It was shown that Fuzzy logic which is used in different areas of science can also be used in the field of agriculture and animal science.

Keywords: Fuzzy Logic, Animal Science, Time Series

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Factors Affected the Production of Steviol Glycosides in *In Vitro* Cultures of *Stevia rebaudiana*

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Abstract

Stevia rebaudiana Bertoni belongs to the family Asteraceae and is primarily native to eastern Paraguay. *Stevia* accumulates mainly in its leaves noncaloric sweet tasting steviol glycosides (SGs). The two most important of these SGs are stevioside and rebaudioside A, but more than 30 SGs have been identified in the scientific literature to date. Besides the medicinal purposes, *Stevia* leaves are used in the food industry due to the natural sweetening properties. The SGs content of field-grown plants varies according to genotype, phenological stage, agronomic practices and environmental conditions. Therefore, field-grown plants show quantitative differences in SGs content. *In vitro* techniques like plant cell culture, callus culture, hairy root culture etc. provide an opportunity for the stable and high production of valuable secondary metabolites under controlled physical conditions. In this presentation, it is analysed the state of the studies regarding the production of SGs and the factors affected the production of SGs in *in vitro* *Stevia* cultures.

Keywords: *Stevia rebaudiana*, *In vitro*, Steviol glycosides, Secondary metabolite, Plant cell culture

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Evaluation of Communication Elements in Scale of Tekirdag City Center in Terms of Visual Pollution

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Abstract

Public spaces are important places that display the values of social life and the quality of the urban living environment. Urban public space is the social and economic interaction areas that are functionally and visually open to social use, allowing people to use, supervise and transform. In this context, what is important for urban design is not only the urban buildings themselves, but also the spaces of the city, which are the intermediate spaces that come from the gathering of these buildings. One of the important elements in making these public spaces livable and perceptible is the communication elements. Communication elements are the urban furniture that are effective in understanding the environment of the human being who are constantly exchanging information with the surrounding environment, using objects correctly and organizing their social life. The pollution of land, water, air and noise comes to mind in terms of environmental problems, which is one of the most debated issues both in the world and in our country. Visual pollution, which is due to the same reasons and which is at least as important a type of pollution, have been recently added to these problems. The visual or ugly appearance can vary depending on the person. However, irregular forms, monotonous settlement, clutter in exterior appearance, color inconsistency, randomly discarded wastes, decadent landscapes, dense housing, a lack of green space etc. make people uncomfortable. The lack of aesthetic support of the functions of urban furniture in public spaces is also a matter of visual pollution. In this study, visual pollution and the reflection of city image of advertising signs, guideboards, bus stations that are called communication elements are examined in case of Tekirdag city center.

Keywords: Visual pollution, Urban furniture, Communication elements, Tekirdag



Investigation of the Effects of Some Cover Crops on Apricot Fruit Quality*

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Abstract

Being the most widely used and applied directly to soil, herbicides are the most hazardous pesticide for the environment. For this reason, many studies have been performed on reducing the use of herbicides especially in organic agriculture and for this aim different approaches have been suggested. Using cover crops is one of those approaches which is especially featured for orchards and based on suppression of weeds and improving fruit quality by controlled growing of suitable plants between and under fruit trees. In this study, the cover crops of Hairy Vetch, Hungarian Vetch, Hungarian Vetch + Triticale, Phacelia and Buckwheat were grown as different applications and their effects on apricot fruit quality were investigated in 2015 and 2016. Those applications were compared with control applications of weedy season-long, cultivation, and total herbicide. According to obtained data, the application of Hungarian Vetch made significant positive effect on most of the fruit quality parameters especially on fruit weight and fruit size parameters of fruit height, width and thickness. These values were found as 34.4 g, 37.35 mm, 36.54 mm and 41.44 mm in Hungarian Vetch application, whereas 32.78 g, 36.18 mm, 35.27 mm and 39.67 mm in total herbicide application, respectively. As a result of this study, it was concluded that cover crops have great potential especially for organic agriculture and Hungarian Vetch is the most beneficial application investigated within the study.

Keywords: Cover crops, apricot, fruit quality, organic agriculture

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Effects of Altitude and Soil Depths on Soil Organic Carbon and Total Nitrogen Stock Capacities of Black Pine in Kastamonu Region

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Abstract

Soil organic carbon and total nitrogen stock assessments at a national level are essential in the climate change mitigation role. Main aim of this present study was to investigate the effects of altitude and soil depths on soil organic carbon (SOC) and total nitrogen (TN) stock capacities of black pine (*Pinus nigra*) in Daday, Kastamonu. For this aim, soil samples of black pine were collected from two altitudes (871 m and 1189 m) on the north and south aspects. The soil samples were taken randomly from 0-5cm, 5-10 cm, 10-15 cm, 15-20 cm, 20-25 cm and 20-30 cm soil depths and analyzed for bulk density, SOC and TN contents and stock capacities. The SOC content only showed significant differences between the two altitudes, while TN content showed significant differences either between the two altitudes and between the soil depths. Mean SOC-stock capacity was higher at the higher altitude (137.1 t C ha⁻¹ on the north aspect and 129.4 t C ha⁻¹ on the south aspect) than that at lower altitude (87.7 t C ha⁻¹ on the north aspect and 99.6 t C ha⁻¹ on the south aspect). Mean TN-stock capacity was also higher at the higher altitude (7.72 t N ha⁻¹) than that at the lower altitude (4.51 t N ha⁻¹) on the north aspect, while on the south aspect, mean TN-stock capacity at the higher altitude (6.40 t N ha⁻¹) was similar to that at the lower altitude (6.15 t N ha⁻¹). Both SOC and TN stock capacities did not show clear differences between the soil depths. In conclusion, our results indicate that topographical factors, altitude in this present study, can significantly affect SOC and TN content and their stock capacities. Therefore, this factor should be considered in the future studies on soil organic carbon and total nitrogen.

Keywords: Black pine, Soil Organic Carbon, Total Nitrogen, Soil depths, Topography



Effects of Tree Species and Soil Depths on Soil Macro and Micro Nutrient Contents

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Abstract

Soil is a major source of nutrients needed by forest trees for growth. Cycling of nutrients in a forest ecosystems is related to natural variability (climate, soil chemistry, succession) and to acidification and reversibility processes in soil, and to management (choice of tree species), Other processes were decomposition, carbon and nitrogen transformation and leaching. Last 6 decades, much emphasis is given to decomposition of litter. Tree species can affect the decomposition process and nutrient cycling through the quality of their leaf fall and through the species-specific conditions that they generate in their environment. Aim of this study was to study variations in soil macro and micro nutrient contents with tree species and soil depths using beech, Scots pine and black pine growing under the same site conditions in Daday, the north-west of the Kastamonu province. Soil samples were collected from six soil depths (0-5 cm, 5-10 cm, 10-15 cm, 15-50 cm, 20-25 cm, 25-30 cm) at the altitude of 1189 m. The soil samples were analyzed for soil pH, soil texture, bulk density, soil macro and micro nutrient contents. Results showed that soil bulk density, soil pH, macro and micro nutrients varied significantly with the three tree species and with the soil depths. The black pine stands had the highest mean soil macronutrients (Ca, Mg, P, K and S), whereas Scots pine stands had the lowest P, K and S. However, Ca content was lowest for the beech stands, and Mg content was similar for the beech and Scots pine stands. As for the micro nutrients, the beech stands had the highest mean soil micronutrients (Fe, Mn, Na, Zn, Cl, and Al), followed by Scots pine and the lowest by black pine stands. Contents of Cu and Co were, however similar between the three trees.

Keywords: Nutrients, Beech, Black pine, Scots pine, Soil depths, Kastamonu



Silver Nanoparticles Induced Morphological and Anatomical Alterations in Wheat Roots

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Abstract

The rapid growth of nanotechnology will inevitably lead to spread of nanomaterials to the environment. Because of the extensive usage in many commercial and medical products, silver nanoparticles (AgNPs) have attracted attention with regard to its environmental impact. Wheat seedlings were exposed to different concentrations of Ag NPs (0.5, 1, 5, 10 and 20 ppm) in sand culture for under controlled growth room. After 15 days the root growth was calculated and intact roots were stained histochemically. Root samples were fixed in 6% glutaraldehyde in 0.1 M phosphate-saline buffer (pH 7.8) and embedded in EPON. Semi-thin sections (1 µm) were stained with toluidine blue and used to demonstrate the anatomical alterations. Based on our results, 10 and 20 ppm of Ag NPs exposure reduced root length and caused morphological changes, while the other exposure groups wasn't affect significantly. In association with with root length inhibition, alternative stress responses including lignin accumulation and callose deposition were observed, in higher concentrations principally. According to semi-thin sections, cortex cells of the roots were deformed in all exposure groups in compare to control, whereas the endodermis and vascular cylinder weren't affected. In conclusion, Ag NPs exposure caused toxicity significantly on wheat roots culminating in morphologic and anatomic alterations.

Keywords: Silver nanoparticles, wheat, root cells, root elongation, lignin, callose

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Physiological and Biochemical Effects of Silver Nanoparticles on *Triticum aestivum* L.

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Abstract

Nanotechnology has wide range of applications in the consumer products. The increased usage of nanoparticles in nanotechnology has attracted attention on their potential toxic effects of these substances. Therefore the biochemical and physiological effects of silver nanoparticles (Ag NPs) were investigated in *Triticum aestivum* L. seedlings. *T. aestivum* seedlings were exposed to different concentrations of Ag NPs (0.5, 1, 5, 10 and 20 ppm) in a sand culture for 15 days under controlled growth room. After Ag NPs exposure ascorbate peroxidase (APOX), guaiacol peroxidase (GPOX), superoxide dismutase (SOD) catalase (CAT) activations and lipid peroxidation (LPO), hydrogen peroxide (H₂O₂), chlorophyll, anthocyanin and prolin contents were determined. Based on our results no significant changes were observed in shoot lengths of control and Ag NPs exposed groups. Ag NPs exposure increased APOX activity, GPOX activity and LPO in compared to control dose dependently. However, SOD and CAT activity were decreased. Moreover H₂O₂ content showed significant increment in all concentrations. In the higher concentration 20 ppm it was increased by 92% fold. Although total chlorophyll content was decreased depending on dose, total proline and anthocyanin content was increased compare to control. In conclusion, Ag NPs exposure caused significant physiological and biochemical alterations in relation to oxidative stress.

Keywords: Ag nanoparticles, peroxidases, hydrogen peroxide, lipid peroxidation, wheat.

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Determination of Vitamin A, E, C, β -Carotene and Lipid Peroxidation Levels of *Capoeta umbla* (Heckel, 1843)

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Abstract

The present study investigated the levels of lipid peroxidation (malondialdehyde; MDA), vitamin E (VE), A (VA), C (VC) and β -carotene (β C) in liver, spleen, muscle and kidney tissues of *Capoeta umbla*. The fish samples used in this study was caught from Keban Dam Lake (Elazığ-Turkey) at August. Analyzes were done in High Performance Liquid Chromotograph (HPLC). The data were analyzed with an Independent-Sample T Test in SPSS 21. It was determined that the parameters analysed was generally higher in liver and spleen compared to kidney and muscle of female and male. The VE, VC and β C levels in liver and kidney were lower female than male. The levels of VC and β C in spleen were higher in male according to female. The VA level in muscle was lower in male than female, but the level of β C in this tissues was higher in male according to female. The MDA level wasn't different in liver, kidney and muscle between male and female, but this level in spleen was higher in male compared to female.

Keywords: *Capoeta umbla*, Vitamins, Oxidative stress, Carotene

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Effects on Lipid Peroxidation, Vitamin E, C, A and β -Carotene Levels in the Tissues of *Astacus leptodactylus* (Esch., 1823) of Iron in Different Ratio

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Abstract

In the present study, the effects on lipid peroxidation (malondialdehyde; MDA), vitamin E (VE), A (VA), C (VC) and β -carotene (β C) of different levels of iron added to the ration of freshwater crayfish (*Astacus leptodactylus*) were investigated. For this aim, a control (C) and there treatment (D₁, D₂, D₃, D₄) rations were prepared. The control diet was formulated to contain approximately 37 % crude protein on a dry-weight basis and 3.25 kcal/g gross energy. The levels of dietary iron were 50, 100, 200 and 300 mg/kg diet for D₁, D₂, D₃, D₄ , respectively. No iron was added to the control diet, except that supplied by the mineral premix and feed ingredients. The study was carried out with 3 replicates for each dietary treatment. Analyzes were done in High Performance Liquid Chromotograph (HPLC). The data were analysed with SPSS 21. In conclusion, it was found that the different levels of iron added to the ration of crayfish were effect on iron level in hepatopancreas, muscle and gills. Especially, The MDA level were higher in the hepatopancreas, muscle and gills of crayfish fed with D₃, D₄ according to C, D₁, D₂. Conversely, the levels of VE, VC, VA and β C in these tissues were lower in crayfish fed with D₃, D₄ according to C, D₁, D₂. No big change in the amount of VA wasn't showed.

Keywords: *Astacus leptodactylus*, Vitamins, Oxidative stress, HPLC



Approaches of Micro-Scale Furniture and Timber Producing Businesses towards Their Waste and Environment

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Abstract

This study aims to demonstrate the environmental awareness and practices of micro-scale businesses operating in the furniture and timber industry, which are two sub-sectors of the forest products industry. Small and medium-sized businesses have a significant place in every country's economy for their size, production and employment. While 99.9% of the timber, furniture and paper sub-sectors constituting the forest industry are in the small and medium-sized class, 96% of them are in the micro-scale business class. Although the environmental impacts of each of these businesses are limited, they have an important influence in total. Since the late 1980s, environmental impacts of businesses have been an increasing matter of concern. As a result, there is an increasing pressure on small and medium-sized business owners and managers to improve their environmental management practices and performances. A questionnaire was applied to 120 businesses representing 885 micro-scale timber and furniture producing businesses operating in Trabzon by face to face interview in 2015. The clear majority of these businesses believe there is environmental pollution, but the number of businesses that believe their businesses less pollute the environment. In addition, some of the results of the survey are that 66% of the businesses believe that waste cannot be reduced and there is no organization collecting the waste.

Keywords: Environment, Micro-sized Enterprise, Waste, Furniture, Sawmilling

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Presence of *Escherichia coli* in Urfa cheese and *In vitro* Screening of Donkey Milk and Essential Oil of *Micromeria congesta* for Antibacterial Activity Using Disc Diffusion Method

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Abstract

The aim of this study was to determine the presence and antibiotic resistance profile of *Escherichia coli* strains in Urfa cheese and comparing the antibacterial activity of donkey milk and essential oil of *Micromeria congesta*. 93 fresh Urfa cheese samples were obtained in Şanlıurfa province. Bacteria were isolated and identified by conventional cultural technique. *In vitro* susceptibility test for antibiotics, donkey milk and essential oil of *M. congesta* were performed with Kirby-Bauer disc diffusion method. Steam distillation was used to obtain the essential oil of *M. congesta*. *E. coli* strains were isolated in 43 (46%) of all cheese samples. The *E. coli* were highly resistant to clindamycin (100%), penicillin (100%), oxacillin (100%), tetracyclin (100%), neomycin (80%), kanamycin (80%), gentamycin (50%), enrofloxacin (50%), streptomycin (46%) and low level of resistance to imipenem (20%), cefoxitin (16%). This study showed *E. coli* strains developed high rates of multidrug resistance. Essential oil of *M. congesta* and donkey milk inhibited a high antimicrobial activity on *E. coli* strains when comparing the antibacterial activity of reference antibiotics (tetracyclin and streptomycin).

Keywords: Urfa cheese, donkey milk, *Micromeria congesta*, antibacterial activity



Why Ice Cream with Yogurt Should Be Preferred?

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Abstract

The consumption of ice cream and yogurt is increasing due to population growth in the World. Ice cream with yoghurt is produced in order to be an option for other types of ice cream. Yogurt is a food with high digestibility because of its high nutritional value. It has the ability to protect and correct the natural intestinal flora. Antitumor, lactose intolerance with anticarcinogenic and anticholesterolemic properties is an important dairy product that can be consumed by people. The nutritious vital ingredients in the milk are also found in the yogurt, complete or even enriched. With the addition of the yogurt to the ice cream, these advantages will allow people to be offered in attractive food. However, the low calorie of yoghurt ice cream adds an extra advantage. Although yogurt does not have such a positive feature, the consumption rate is very low. In yoghurt ice cream production, milk is fermented first and then other ingredients are added and frozen. Reliable food is obtained with the applied heat treatments. The increase in consumption of yoghurt and ice cream in the world is thought to be directly proportional to the increase in product options. However, with the production of yoghurt ice cream in different flavors and aromas, new taste will be provided to Turkish taste.

Keywords: Food, Ice Cream, Yogurt



Nitrite-Nitrate in Meat Products And Their Effects of The Human Health

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Abstract

Nitrate and nitrite are widely used in meat products to contribute the development of characteristic color and flavor, take control the lipid oxidation and exhibit antimicrobial effect on pathogen microorganisms in the first instance *Clostridium botulinum*. In addition to the desired effects, many researches have shown that these curing agents have carcinogenic properties. Nitrite and nitrate do not have carcinogenic effect it self but they react different with the other components during the cooking or digestion process and they occurred to the carcinogenic's form. Their use in the whole world has been the legal restrictions. Considering the health risk factors, nowadays the search for alternative natural additives, which have the qualities to the functions of these compounds in the meat production. In this study reviewed the use of nitrites and nitrates in the meat production and the effects on the human health.

Keywords: Health, Meat, Nitrate, Nitrite, Nutrition, Sausage.

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Spreadable Liver Products

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Abstract

Some nutritional problems have been observed due to increased rapidly in the world populations. This required the researches to alternative foods production. Meat is the most important in human adequate and balanced nutrition as a rich source of the protein. All edible animal tissues are defined as meat generally. The liver, which is known as the offal, is the main source of the vitamins A, D, E, K and B₁₂ and has high contents of hemeiron. Varied products produced using liver in the different regions of the World. Liver sausages and liver paste products produced all possible spices and medicinal herbs as well as other ingredients such as wine and cognac are used as taste and aroma ingredients. These products are in the category of emulsion type meats and mixed liver, meat, fat and other ingredients into emulsion. Spreadable properties provided in this way. Nitrite and nitrates are used to ensure food safety and long shelf life especially in industrial production. Some spreadable liver products can also sold by the fermentation process. Different mateials are used to packing but the natural or synthetic intestines commonly. In this study reviewed the spreadable meat products from liver using the current literature datas.

Keywords:Health, Innovation, Liver, Spreadable meat.



Determination of Some Mechanical Properties of Standing Beech and Pine Wood with Fractometer

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Abstract

It is very important to determine the classification and quality of woods obtained from standing trees according to efficiently using of limited forest resources. Semi-destructive and non-destructive test methods having a big potential to determine wood quality supply comparable information. Recently, studies have been focus on this subject. Fractometer can be described semi-destructive or non-destructive test method. The fractometer is a device that breaks a radial increment core along the fiber for the measurement of crushing strength, which is a direct wood quality indicator for wood material. In this study the increment cores were taken from standing Beech (*Fagus orientalis* Lipsky) and Pine (*Pinus nigra subsp. pallasiana*) trees. The 30 increment cores for each species were extracted with increment borer and conditioned in a climatic chamber in 20 °C temperature and 65% relative humidity to get 12% moisture content. These increment cores were used to measure radial bending strength and compressive strength parallel to grain with Fractometer. Each measurement were realized at green and air-dry condition. The obtained values for pine trees, volume-density was 0,53 gr/cm³, radial bending strength is 5,53 Mpa and compressive strength parallel to grain is 26,65 Mpa in standing trees. Radial bending strength is 10,97 Mpa and compressive strength parallel to grain is 54,43 Mpa in air-dry clear specimens. For beech trees volume-density was 0,603 gr/cm³, radial bending strength 17,15 Mpa and compressive strength parallel to grain 35,8 Mpa in standing trees. Radial bending strength 25,16 Mpa and compressive strength parallel to grain 61,10 Mpa in air-dry clear specimens. The results showed that obtained values from Fractometer were in accordance with results of conventional methods.

Keywords: Fractometer, Standing trees, Mechanical properties, Beech, Pine

Fungal diseases occurring on boxwood saplings grown in Marmara and Black Sea regions of Turkey

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Abstract

Boxwood is grown in many nurseries in Turkey, especially for ornamental use and it was a profitable job before the onset of Boxwood blight which caused great damage on this plant in the world. Some boxwood growers abandoned their work because of the disease. For this reason fungal diseases of boxwood were investigated in four state and 8 private nurseries located in western black sea region and Marmara regions of Turkey. Boxwood saplings were examined for disease symptoms of leaf spots, wilting and damping off and samples were collected. Fungal pathogens were determined by using appropriate growth media for isolations. *Alternaria* sp., *Cylindrocladium pseudonaviculatum*, *Fusarium* spp., *Gliocladium roseum*, *Phoma* spp., *Phytophthora nicotianae*, and *Volutella buxi* were isolated from diseased specimens. Pathogenicity of these fungi was tested on detached young shoots of common box (*Buxus sempervirens*) by inoculating the fungi on wounded and intact leaves. Two *C. pseudonaviculatum* isolates obtained from Kent nursery caused 80.66 %; 76.00% and 100%; 100% leaf blight on wounded and intact leaves respectively. Three *Phoma* sp. tested for pathogenicity and only one isolate produced 25% leaf spot on only wounded leaves. *Phytophthora nicotianae*, obtained from one nursery induced 100% mortality on both wounded and intact leaved. *Volutella buxi* produced weak yellowing symptoms only on wounded leaved.

Keywords: Boxwood, dieback, *Cylindrocladium*, *Phytophthora*, *Volutella*



Determination of Effect on Turf Performance of Some Organic Cover Materials

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Abstract

This study was conducted to determine the effects of different organic cover materials on turf performance of perennial ryegrass (*Lolium perenne* L.) in Isparta. Eleven different cover materials (cattle manure, sheep manure, poultry manure, mushroom waste compost, peat, soil, %50 cattle manure+%50 soil, %50 sheep manure+%50 soil, %50 poultry manure+%50 soil, %50 mushroom waste compost+%50 soil and %50 peat+%50 soil) were used. The study was carried out at Agricultural Research and Applied Center of Suleyman Demirel University in Turkey, during 2014-15 years. This research was conducted in randomized block design with three replication. In the experiment were determined speed of germination, ground cover speed, ground cover rate, cold tolerance, leaf color, regeneration power, leaf texture, tiller number, general appearance and dry matter yield. According to results of this study, cattle manure and mushroom waste compost showed the best performans in terms of speed of germination. The best performances in terms of ground cover speed were observed from peat. Sheep manure and poultry manure showed the best performance in terms of ground cover rate, leaf color, regeneration power, leaf texture, tiller number, general appearance and dry matter yield. Soil showed the worse performans in terms of all the properties determined. As a results, pure sheep manure and poultry manure may be used for turf establishment.

Keywords: turf grass, cover material, ground cover rate, tiller number, leaf color.



Farmers Perspective on Potato Wart Disease in Nevşehir and Niğde Provinces

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Abstract

In Turkey, one of the most important diseases of potato is the potato wart disease, caused by the soil-borne fungus *Synchytrium endobioticum*. The fungus is a quarantine pathogen. The production areas of potato in contaminated fields are banned because *S. endobioticum* sporangium can survive in the soil for decades. This disease firstly was reported in 2003, in Black Sea and Middle Anatolian Regions of Turkey. In Middle Anatolian Region, Niğde and Nevşehir have got large commercial potato fields in terms of edible and seed. However, the potato wart disease is the most limiting factor in potato production. In this study, awareness and point of view of the farmers about potato wart disease were tried to determine in Nevşehir and Niğde provinces. The research population included both the potato producers that have disease free fields and the producers that gets potato wart compensation that have fields under quarantine because of contamination in Nevşehir and Niğde provinces. In the study "Stratified Random Sampling" method and Neyman method were used. In Nevşehir province 171, in Niğde province 163, totally 334 farmers survey were done. At the end of the survey, the results about sanitary rules, the knowledge level, the knowledge resource etc. were obtained and discussed. In this study region, the sustainability of potato agriculture is very important for farmers due to the fundamental source of income. The future of potato farming will be determined according to farmers attitudes. For this reason, especially in Nevşehir and Niğde provinces, the farmers should be more informed about potato wart disease and their needs and demands for potato production should be considered.

Keywords: Potato, point of view, *Synchytrium endobioticum*

Antibiotic Resistance of *Staphylococcus* Spp and *Salmonella* Spp Isolated From Poultry Farm Eggs of Eastern Mediterranean Part of Turkey

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Abstract

The increase of antibiotic resistance in bacteria has become a global problem. Most of the *Salmonella* infections in humans' results from the ingestion of contaminated poultry products. These infections are associated with the consumption of raw eggs and foods. The aim of this study was investigate the antibiotic resistance of *Salmonella* and *Staphylococcus* isolated from eggs. The prevalence of *Salmonella* and *staphylococcus* isolated from poultry farm of Adana at Turkey. Isolates of *Salmonella* and *staphylococci* were gathered from egg samples, collected, analyzed for resistance to antimicrobial agents. Antibiotic susceptibility tests were carried out by the disk diffusion method. Exactly, the *Salmonella* and *staphylococcus* isolates were enriched in tryptic soy broth for 16-18 hours at 37°C before swabbing on to surface dried plates of sterile Mueller Hinton Agar (MHA). Antibiotic disks were placed on the seeded agar surface, sufficiently separated from each other so as to avoid overlapping of inhibition zones. The plates were then incubated at 37°C for 24-48 hours, diameter of inhibition zones were recorded and compared with the Kirby Bauer chart for the interpretation of results. The antibiotics used and their concentration was as follows: amoxicillin (10 mcg), ciprofloxacin (5 mcg), vancomycin (30 mcg) , teicoplanin, erythromycin (5 mcg), ceflotaxime(30 mcg). More resistance was observed in the *Salmonella* isolates (n=27) than in the *Staphylococcus* isolates (n=27). Many *Salmonella* isolates exhibited resistance to cefotaxime, teicoplanin, and erythromycin and amoxicillin. Most *Stapylococcus* isolates were susceptible to all antimicrobial drugs expect cefotaxime and amoxicillin. Only vancomycin and ciproflaxin as antimicrobial agents showed inhibitor effect for both *Staphylococcus* and *Salmonella* isolates. These datas indicate that shell eggs can harbor resistant foodborne and commensal bacteria; among *Salmonella* isolates. The widespread occurrence of multiple resistant *Salmonella* strains is a cause for concern, and local regulatory enforcement agencies should ensure prudent use of antibiotics.

Keywords: Egg, *Salmonella*, *Staphylococcus*, antibiotic resistance



Improved catalytic activity of *Pseudomonas fluorescens* lipase by covalent immobilization onto Eupergit CM

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Abstract

Pseudomonas fluorescens lipase was covalently immobilized onto commercial support Eupergit CM. By optimizing the immobilization conditions (ratio of matrix/enzyme, pH of buffer medium, molarity of buffer medium, duration of immobilization), 100,0±0,2 % immobilization yield and 170,0±1,1 % activity yield were obtained. The best results were achieved in the immobilization of 200 µL lipase onto 400 mg of Eupergit CM in 5 mL of 0.75 M phosphate buffer (pH 9) at room temperature (25 °C) for 120 hours. The operational and storage stabilities of the immobilized enzyme were also studied. The immobilized lipase has not lost its activity during the consecutive 20 batch reactions and when stored in 5 mL of phosphate buffer (pH 9) at +4 °C in a refrigerator for 20 days. It can be said that the obtained immobilized *Pseudomonas fluorescens* lipase can be used in the industrial applications such as production of biodiesel, hydrolysis of oils and transesterification of oils.

Keywords: Amberzyme, covalent attachment, enzyme immobilization, lipase, *Pseudomonas fluorescens*

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Effect of Different PGPR Applications on Micro Element Content of Wheat Grown Soils

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Abstract

This study was conducted on aridisols, a soil order widely exists in Eastern Anatolia Region. The trial was conducted in 81 pots with an experimental design of 2 x 4 x 5 factorial, 1 plant (wheat) and no plant, control and 3 microorganisms (*Bacillus megaterium* M3, *Bacillus subtilis* Osu-142, *Paenibacillus polymxa*). Each treatment was five replicate. Plant and soil samples were taken at the end of the growing period (90 days) and micronutrients elements of soils were determined. The results obtained have shown that micro element contents of soil significantly affected the wheat plant growing. The highest Fe and Cu contents were obtained by *Bacillus megaterium* M3 PGPR application. The highest Zn and Mn contents were obtained by *Paenibacillus polymxa* PGPR application. Positive correlations were determined between the PGPR and soil micro element contents. In addition, micro-element content of no plant-cover soils and micro-element contents of wheat-grown soils differed. Especially in plants grown in soil were found to be more effective in PGPR.

Keywords: PGPR, wheat, micro element

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Noise Effects of Roads on Wildlife using GIS: A case study of Bartın– Karabuk Highway

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Abstract

While our forests cover 27% surface area of our country, wild areas correspond to 90% of our country together with forests and a size of 70 million hectares. However sustainability of these sources will be possible by realizing protection and usage balance. Protection, development and sustainable management of our wildlife sources including our forests is the most basic responsibility. In this context it is necessary to minimize the human originated negative factors affecting wildlife under the scope of sustainable management principle. Most important of these structures are roads. In this context risk factors in wild life related areas should be determined by studies to be conducted on highways and necessary precautions should be taken. This study was conducted on 30 km long part of Bartın-Karabuk road majority of which is located in wild life area. Noise measurements were made in totally 94 points by using CELL633A1 noise level meter tool in the time period when traffic was crowded. All collected data was transferred to GIS environment. While modeling the spatial variation of road related noise, IDW (Inverse Distance Weight) interpolation was applied. After that audio surveillance was performed in points which were away from noise effect (46.4 dBc/Hz) and accordingly a noise map was formed along the road within the region up to that limit value. On the map that was formed, suggestions were made about precautions to be taken for wild animals.

Keywords: Wildlife, GIS, Noise, Highway.

The Effect of Different EC Levels on Yield and Some Fruit Quality Properties in Grafted and Ungrafted Tomatoes

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Abstract

Conditions such as temperature, humidity, salinity level of the cultivated environment have important effects on fruit yield and quality, and some changes in environmental conditions may have an improving effect on the internal quality of the fruit. This study was carried out to determine the effect of different EC levels on yield and some fruit quality characteristics of grafted and ungrafted tomato plants. The study was conducted according to the closed feed system of soilless agriculture and EC levels were prepared by adding all macro and micro elements to the nutrient solution. In the experiment, 5 different EC levels (2, 3, 6, 9 and 12 dS m⁻¹) were used, It was determined that the total yield with grafting increased by 28.20% and the total number of fruits increased by 20.75%. As the electrical conductivity increased from 2 dS m⁻¹ to 12 dS m⁻¹, the total yield, the total fruit number, fruit diameter and pericarp thickness were decreased 79.65%, 33.66%, 31.04% and 31.33% respectively. But titratable acidity (TA), total soluble solid (TSS) and fruit juice EC were increased by 181.73%, 84.75% and 43.00% respectively. Internal quality of the fruit was enhanced with an increase in the EC of the nutrient solution, but yield decreased significantly. The decrease in yield was relatively mitigated by using rootstock.

Keywords: Soilless culture, *Solanum lycopersicon*, electrical conductivity, salinity.

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Occurrence of root rot caused by *Phytophthora cryptogea* on common sage (*Salvia officinalis*) in Turkey

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Abstract

Common sage (*Salvia officinalis* L.) is a spice growing in natural habitat of Turkey. About 1100 tons of common sage are imported and with the amount collected from nature habitat total 1700 tons are exported after processing in Turkey. Collection of a lot of material from nature will create a natural imbalance and to reduce the risk, cultivation of sage has been tried in several places. Recently, a sudden damping off disease has been observed in common sage experimental plots in İzmir and cutting propagation green houses in Ankara. The diseased plants showed root and crown rots typical of *Phytophthora* symptoms. Isolations on selective media revealed a new *Phytophthora* species. This species was identified as *P. cryptogea* by its morphological and molecular characteristics of DNA base sequences of ITS regions. Pathogenicity of *P. cryptogea* was proved on rooted cuttings of common sage. This is the first report of *P. cryptogea* on common sage in Turkey. More information on diseases of these spices and their control is given in the text.

Keywords: Sage, *Salvia*, *Phytophthora* root rot, cutting

A Study on The Rheological Properties of Gluten-Free Biscuit Doughs Containing Tiger Nut Flour and A Gum Blend

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Abstract

Gluten replacement is one of the most challenging issues for food science and technology since a lifelong gluten-free diet is essential for patients having celiac disease. Rheological data represent the flow and deformation behavior of the materials. Biscuit dough containing various ingredients can be accepted as a multiphase system and the rheological properties of it depends on many factors such as its composition, the amount and time of shear rate applied, temperature etc. Textural properties, spread ratio and dimensions after baking, which gives information about the quality of the biscuit, are related to the rheological properties of biscuit dough. In this study, dynamic rheological properties of gluten-free rice biscuit doughs containing different amounts of tiger nut flour and a gum blend were investigated. Different rice flour/tiger nut flour ratios were used in the formulations (90/10, 80/20, 70/30, 60/40 and 50/50) and xanthan-guar gum blend were the types of hydrocolloids added to the dough formulations. A controlled stress rheometer (Malvern Kinexus, Lab+) was used in oscillatory test. It was equipped with a 20 mm parallel plate probe and a dough sample of 2 g was placed on the lower plate. The upper plate was lowered until the gap was 3 mm. The sample rested 10 min before measurements were conducted, and all experiments were done at 25 °C. A strain sweep from 0,1% to 100% at a frequency of 1 Hz was made to determine the linear viscoelastic region. According to these results, a frequency sweep between 0,1-10 Hz was performed at constant 0,5 % strain, which was in the viscoelastic region. The results were expressed in terms of the storage modulus G' ; the storage modulus G'' and the phase angle $\tan \delta$. According to the results of the experiments, G' and G'' values represented the elastic and viscous nature of the biscuit doughs, respectively. When G' values were compared to G'' values for each dough formulation, it was observed that G' , storage modulus values were higher than the G'' loss modulus values. This indicated that biscuit doughs have more elastic-like structure. The phase angle $\tan \delta$, which is the ratio of G''/G' , gave the values lower than 1 for all dough formulations. Additionally, the viscosity of the biscuit doughs decreased by increasing the frequency values. G' storage modulus values decreased by increasing the tiger nut flour percent.

Keywords: Rheology, gluten-free, tiger nut, biscuit dough

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The Changing of The Solid Waste Quantity in Turkey

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Abstract

With increasing population, food production tends to increase day by day. Accordingly, the increase in consumption causes the increase in the amount of waste. These wastes must be disposed of in order not to affect the living life negatively. Various disposal methods are applied in order to remove wastes from our country. These methods are categorized as pouring into the municipal garbage, sent to the landfill, open burning, pouring into the lake and pond. Among these disposal methods; According to the statistics of the Turkish Statistical Institute, the amount of solid wastes discharged to the municipal waste in Turkey was 14.4 thousand tons year⁻¹ in 1994, while it decreased to 9.9 thousand tons year⁻¹ with a decrease of 31% in 2014. In addition, the amount of waste sent to the landfill site was 809 thousand tons per year in 1994, while it increased to 17.8 thousand tons year⁻¹ in 2014 with an increase of about 21%. Another waste disposal type, the amount of waste poured into the dock and the pond was 558 thousand tons year⁻¹ in 1994, while it was determined as 16 thousand tons year⁻¹ in 2014 with a decrease of 97%. In general, the amount of municipal solid waste collected in Turkey increased from 17.7 thousand tons per year in 1994 to about 28 thousand tons year⁻¹ by the end of 2014 with an increase of 57.7%. Looking at these rates, developments in waste management in Turkey tend to improve day by day. Taking into consideration that negative impacts on environment and living can be avoided, it will be inevitable for municipalities to provide positive impacts on the environment by increasing investment support for infrastructure works in order to reach more precise results in solid waste disposal.

Keywords: Solid Waste, Disposal of Waste, Turkey

The Effects of UV-B Illumination on Morphological and Biochemical Properties of Broccoli Florets*

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Abstract

In this study, the impact of UV-B illumination during vegetation period on yield, plant growth and biochemical properties of broccoli florets were studied. The broccoli heads were grown under three different doses of UV-B illumination (2.2, 8.8 and 16.4 kJ m⁻²) in the soilless production system in a glasshouse during the two consecutive years. Experiment results show that, while plant height decreased, leaf thickness increased with the increasing supplementary UV-B illumination doses. Chlorophyll content in the leaf increased during the growing period. However, it decreased with increasing UV-B illumination doses. Yield, total soluble content (dry matter), total soluble solids, carotenoid, chlorophyll a and chlorophyll b value in broccoli heads decreased with increasing UV-B illuminations doses. On the other hand, total phenolics, total flavonoids, ascorbic acid, antioxidant activity and sinigrin contents were increased with increasing UV-B illuminations doses. There were no statistical differences among UV-B illumination doses for glucotropaeolin contents.

Keywords: Broccoli, UV-B, Harvest quality, Biochemical composition

*This research was support by TÜBİTAK (Project number: 112O352)

The Effects on Different Ozone Doses, Sorting Methods and Packaging Materials on Quality of Cherry Storage*

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Abstract

In this research, the effects of ozone, sorting methods and packaging materials on postharvest quality of '0900 Ziraat' cherry fruit were investigated. For this purpose, three different ozone doses (0, 0.5 and 1 ppm), two sorting methods (manual and mechanical) and four different packaging materials (control, punnet, cling wrapping and consumer bag) were tested. After these applications cherries were stored at 0°C with 90±5% relative humidity for 30 days. Physical and chemical analyses such as weight loss, titratable acidity, fruit firmness, pH, soluble solids, skin color, pitting, stem browning and decay incidence were carried out. During the storage, 1 ppm ozone application gave better results in terms of the pitting and fruit decay. On the other hand, there were no statistical differences between 1 ppm ozone and control treatments in terms of the stem browning. Manuel processing in cherry fruit resulted the lower weight loss, titratable acidity, pH, fruit firmness, chroma value (C*) , hue angle (h°), pitting and stem browning comparing to that of mechanically processed cherries. There were no differences among packaging materials in terms of fruits firmness and C* value. The lowest weight loss and pH was found in the fruit packed with cling film and the highest h° and decay percentage was also found in the same application. Packaging of cherries in different packaging materials were found to more effective to prevent stem browning compared to control fruits. But there were no significant differences among packaging materials for stem browning. As a result of this study, although mechanically processing is a fast method for sorting in cherries it can be lead some mechanical injury. The use of 0.5 ppm ozonated water was also found to beneficial for cherries during long term storage.

Keywords: Cherry, Ozone, Storage, Quality, Packaging

*This research was support by TUBİTAK (Project number: 114O127)



Distribution of *Trogoderma granarium* Everts in Southeast Anatolian Grain Storages, Turkey

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Abstract

The khapra beetle, *Trogoderma granarium* Everts, is a serious pest of stored grains in Turkey. This study was conducted to determine the distribution and infestation status of *Trogoderma granarium* in grain storages of Southeast Anatolia Region, Turkey. The surveys at grain storages were conducted in five province, Diyarbakır, Mardin, Şanlıurfa, Adıyaman and Batman, including 12 district. A total of 355 samples of wheat grain were collected during April–December in 2014-2016 from grain storage facilities at 31 different locations. At each storage site, around 4 kg wheat was collected from the storages at different points and depths and visual inspection were also taken near and cracks of the walls and surfaces of the grain storage. It was found that the grain storages of the provinces were infected by *Trogoderma granarium*. The high-level infestation of the khapra beetle were determined in Mardin and Şanlıurfa provinces with 77.50% and 73.5% respectively. The infestation ratios of different grain storage types were 80.9, 59.8 and 27.3% in basic plasterless farm granaries, concrete wall granaries and steel silos respectively. As a result, areas with inadequate sanitation, low light levels, or cracks and crevices, are at the important factors in the storages in terms of infestation and distribution of the pest. That is why, some control measures such as sanitation of infested area, avoiding to store old and new wheat grains in the same storage should be take into account as basic control strategies. In addition, steel silos should be encouraged for building the new storages and improving the traditional farmers and private grain trader storages in order to increase the success of the control against *T. granarium* in the region.

Keywords: *Trogoderma granarium*, Khapra beetle, Storage, Southeast Anatolia Region



Resistance of *Trogoderma granarium* against Deltamethrin and Malathion in various grain storages in Turkey

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Abstract

The khapra beetle, *Trogoderma granarium* Everts (Coleoptera: Dermestidae) is one of the destructive stored grains pests in Turkey. Despite substantial need on Malathion and deltamethrin for fumigating stored wheat, the resistance status of khapra beetle in Turkey had never undertaken a comprehensive investigation. We surveyed Malathion and Deltamethrin resistance of *T. granarium* populations in various grain storages in Southeast Anatolia region of Turkey. The surveys were conducted in Diyarbakır, Mardin, Şanlıurfa, Adıyaman and Batman provinces during 2014-2016. In total, 24 *T. granarium* populations were collected from different storage facilities of the region. The two times LC₅₀ chemicals dozes, applied to susceptible population, were used to 24 populations and in term 6 populations were selected as test populations and subjected to further trials. The results indicated that the most resistant populations were found in Mardin against Deltamethrin and in Şanlıurfa province with Malathion. Resistance rates were 10.7- 4.0 times in Deltamethrin and 1.92-1.32 times in Malathion for LC₅₀ and LD₅₀ respectively. It could be concluded that *T. granarium* did not developed significant resistant level against these chemicals. However, decrease in the success of fully control of the pest were due to inappropriate storage conditions and applications of unsuitable insecticides in the Southeast Anatolian region of Turkey.

Keywords: *Trogoderma granarium*, Khapra beetle, Storage, Resistance, Malathion, Deltamethrin



An Overview of Dietary Fiber In Terms of Food Technology

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Abstract

Dietary fiber (DF) is a resistant plant material to enzymatic digestion in human diet. The increased attention of DF in food products is caused by an increased interest in developing health foods, DF consists from polysaccharides, oligosaccharides, cellulose, hemicelluloses, resistant starch, pectin substances, and gums, also the DF has wide application in food processing because of its technological properties. Many different classifications can be done according to their function in the plant, the type of polysaccharide, and their simulated gastrointestinal solubility, also on the site of digestion and based on products of digestion and physiological classification. Classification of dietary fiber is differentiated dietary components on their solubility in a buffer at a defined pH, or their fermentability in a vitro system using an aqueous enzyme solution representative of human alimentary enzymes. Fiber-rich foods such as cereals, nuts, fruits and vegetables have a positive effect on health and they help prevent many diseases by their consumption. DF can be used in many functional foods like drinks, beverages, bakery and meat products. Fibers may be soluble or insoluble and have different physiological effects; i.e. cellulose speeds transit of material through the gut while gel-forming fibers may actually retard transit time. Effect of different processing treatments (like cooking, canning, grinding, boiling, frying) change the physicochemical properties of DF and improve their functionality.

Keywords: Dietary fiber, food, health, digestion

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Total Phenolic Compounds, Total Flavonoid Substances and Total Antioxidant Capacity of Kastamonu Garlic

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Abstract

Since the earliest times, humans have benefited from different forms of plants in their environment. After the therapeutic properties of plants have been recognized, The information gained is even more important, furthermore orientation to natural products significantly increased due to the therapeutic properties of plants. Many studies have been carried out on garlic which is useful for health and still continued. It is known that garlic, a strong natural antioxidant, contributes to the prevention of diseases caused by oxidative stress such as cardiovascular diseases, diabetes, neurodegenerative diseases, aging, cartilage inflammation, respiratory diseases, Down syndrome and cancer. Natural antioxidants include α -tocopherols (vitamin E), ascorbic acid (vitamin C), carotenoids and polyphenolic compounds. It is determined by studies that these compounds protect from oxidation to materials which are in the food and are easily oxidized. Turkey is one of the major countries producing garlic in the world and a significant part of production is made with a kind of garlic called Kastamonu garlic. In this study, total phenolic compound, total flavonoid substance and total antioxidant capacity of 10 garlic samples obtained from Taşköprü district of Kastamonu province are examined. As a result of the analyzes, the average amounts of total phenolic compound, total flavonoid substance and total antioxidant capacity in garlic samples are determined that 0,80 mg GE/g; 0,15 mg QE/g; 8,63 mg AE/g; respectively.

Keywords:Kastamonu, garlic, phenolic, flavonoid, antioxidant

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New Approaches for the Food Traceability Implementations

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Abstract

In recent years, the demand for reliable food production and consumption by increasing consumer awareness has increased considerably. Examination of the reliability of the produced food, protection, and feedbacks in the right time and in the right way brings the food traceability concept. There are many different definitions of the concept of traceability. As well as the safety management systems, food traceability concept is a reliable tool to ensure the follow-up "from farm to fork" in order to be foods to be consumed in a healthy way. A more technical definition of traceability will be done in accordance with European Union law; which means the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution. The purpose of this work is to investigate food industry sector with respect to research and development activities and/or products and to identify the rapidly evolving information technologies to what extent and how they are used in this area.

Keywords: traceability, food safety, information technologies



Microalgae: Functional Foods and/or Additives for Food Products

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Abstract

In recent years, depending on increasing of nutritional and health problems, interest to microalgae because of their high nutrient content is increasing. Microalgae can be used as bioactive additives or bioactive supplements for functional food production. Microalgae are used in many field such as human and animal nutrition for therapeutic, nutraceuticals, pharmaceuticals, aquaculture, cosmetics and functional foods. They have capable of high industrial value added product potentials. Generally, microalgae are an ecological food and/or food additive due to rich in bioactive compounds such as proteins, amino acids, essential oils acids, vitamins, natural pigments. These compounds have many bioactive properties such as antioxidant, antihypertensive, antimicrobial, antidiabetic, antiviral, anticoagulant, antitumor and immunostimulant. At the same time microalgae are used in soil enrichment, animal feed, wastewater treatment, biodiesel production and pharmacy. In this review, the bioactive effect on human health of protein-amino acids, essential fatty acids, vitamins, natural pigments and other components produced from microalgae will be discussed as functional food and/or additives for foods.

Keywords: microalgae, bioactive compounds, functional foods, food additives



Determination of Crude Nutrient Content of Forage Resources in Some Provinces of The GAP Region

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Abstract

This study was conducted to determine the nutritive values in some roughages produced in the GAP region and used for animal feeding. In corn silage, wheat straw (WS) and lentil straw (LS) samples collected from Diyarbakır, Adıyaman, Mardin and Şanlıurfa regions.

Dry matter (DM), crude protein (CP), crude cellulose (CS), Neutral detergent fiber (NDF), Acid detergent fiber (ADF), crude oil (CO) and crude ash (CA) values were determined.

As a result of this study, the content of DM of corn silage was found 22.81%, while the contents of corn silage's CP, CS, NDF, ADF, CO and CA on dry matter basis were determined 7.38%, 24.12%, 53.20%, 32.84%, 2.68% and 5.13% as the average of all regions respectively. These values found in wheat straw and lentil straw were 2.59%, 41.50, 70.90, 47.92, 1.47, 7.70, 6.72, 33.30, 57.97, 40.86, 1.38, 8.81% respectively. There was a significant difference between the regions in terms of corn silage and lentil straw DM% content ($P < 0.05$). The highest dry matter content of corn silage was obtained from Şanlıurfa region, whereas the lowest value was obtained from the Diyarbakır. In addition to, the highest dry matter content of lentil straw was obtained from Şanlıurfa and Adıyaman region, whereas the lowest value was obtained from the Mardin region. On the other hand, there were not significant statistical differences between the regions in terms of CP, CS, ADF, CO and CA values in all samples. NDF contents of lentil straw did not change statistically between the regions ($P > 0.05$).

Keywords: Forage, nutrient content, GAP region

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Effects of Soil Moisture and Bulk Density on Cone Index

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Abstract

The use of tools and machinery in agriculture in our country and all over the world provides great convenience for producers. In addition to this ease, agricultural tools can cause considerable soil compaction due to pressure on the soil. Undoubtedly, this situation can affect plant development negatively. Significant difficulties are encountered in comparing and interpreting the penetration measurements made to determine the level of soil compaction. The reason for this is that penetration resistance is significantly affected by soil moisture and bulk density. In this study, regression models were established by determining the effects of different moisture and bulk densities on soil penetration resistance on a soil with high clay content which is common in our region. As a result, the relation of soil compaction to bulk density and humidity is found statistically significant.

Keywords: Bulk density, soil moisture, soil compaction



Evaluation of Sugar Law in Turkey From The Food Regime Perspective and The Regulatory Role of The Sugar Board as A Regulation Agency

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Abstract

In order to regulate the production of sugar, which has a significant share in terms of agricultural production in the study, The Sugar Law prepared in Turkey and currently implemented has been taken from the perspective of food regime and examined the regulatory role of the Sugar Board, a regulatory agency. While the first and second stages of the food regime are clear in the literature, the existence and development of the third stage has not yet been reached consensus. Although there is no clarity about the third stage of the food regime considering the first and second stages, the Sugar Law was examined in terms of the globalization phenomenon accelerating from the 1990s. In addition, from the perspective of the quota which the Sugar Board implements as a regulatory institution Sugar Law has created the need to be examined. States can regulate markets with fiscal and institutional measures as well as fiscal policies in this context, the Sugar Board has been studied as a regulatory institution and the regulatory role on the sugar market. As a result, in current applications sugar beet per capita is reduced for sugar production and seed import is made from abroad for starch-based sugar production. While this makes imports attractive in terms of price, it reduces exports and makes Turkey an exporting country dependent on imports in terms of sugar production.

Keywords: Food regime, Regulation, Public policy, Sugar Law, The Sugar Board.

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A Study on Microspore Embryogenesis in *Brassica napus* L. as a Model Plant

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Abstract

Microspore embryogenesis is a process in which microspores are re-programmed by stress treatment toward embryogenesis during *in vitro* culture. The use of microspore culture to obtain doubled-haploids (DH) is an important alternative to classical breeding techniques to accelerate breeding programs. Microspore embryogenesis has been studied in several agronomically important crops, but there are many points still needed for its optimization. In present study, rapeseed (*Brassica napus* L.) was used as a model plant to establish an effective protocol for microspore embryogenesis in other *Brassica* species. To serve the purpose, plants of *Brassica napus* L. cv. Topas were used for the experiments. Microspores were isolated at late uninucleate microspore stage, cultured in NLN-13 medium and exposed to a heat treatment at 32.5 °C for 24 h to induce haploid embryo formation. As a result of study, 64 embryos / petri dishes were obtained in the specified medium and conditions and it was decided that the stated protocol could be tested in other *Brassica* species.

Keywords: Microspore embryogenesis, haploid, DH, microspore culture. *B. napus* L.



Determination of Biogas Potential from Animal Waste in Kırşehir Province

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Abstract

In this study, it was aimed to determine the biogas potential and equivalence of other fuel types from the amounts of fertilizer that can be obtained from animal (bovine, ovine and poultry) wastes in Kırşehir provinces and districts. When animals are examined at the provinces of Kırşehir province, a total of 1347435 animals are found. While 72.15% of the animals in the province constitute poultry, 16.28% of them are ovine, followed by bovine with 11.58%. When the distribution of the animals in the province of Kırşehir is examined, it is observed that the animal existence is 33.03% in the central province with 33.03%, followed by 28.45% Mucur, 19.92% Boztepe, 8.02% Kaman, 5.66% Çiçekdağı, 2.96% Akpınar and 1.96% Akçakent. According to this, the total amount of annual fertilizer calculated for the total number of 1347435 animals in the country is 736504.9 tons/year while the amount of waste that can be used is 406168.3 tons/year, 81.09% of this amount is bovine, 11.12% is poultry and 7.79% is obtained from ovine. It is seen that Kırşehir province has an annual production potential of 14855272.55 m³ biogas. According to the total biogas amounts in the provinces, according to the total biogas amounting to 5758495.98 m³ per year, the central district takes the first order 2818957.93 m³ Boztepe, 1727139.21 m³ Mucur, 1706130.19 m³ Kaman, 1425899.05 m³ Çiçekdağı, 855465.967 m³ Akpınar and 563184.216 m³ Akçakent. It is seen that the amount of biogas of 14855273 m³ that can be obtained throughout the province is equivalent to the energy obtained from approximately 69819781 kWh electric energy, 51547795.7 kg wood, 11141454.4 liter gasoline, 9804479.9 liter diesel oil. According to this, income that can be obtained from electricity according to the data of 2017 in the province is 30022505.8 TL, wood is 15464338.7 TL, gasoline is 60720926.5 TL and diesel oil is 46081055 TL. As a result of the study, it has been determined that biogas production for individuals providing livelihoods in agriculture and livestock in Kırşehir province can play an important role in the sustainable development of the region while increasing the welfare of those living in the region.

Keywords: Animal waste, Biogas, Biogas potential

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Allelopathic Potential of *Ailanthus altissima* Extract on Germination of Weed Seeds

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Abstract

Swingle, *Ailanthus altissima* (Mill.) an aggressive non-native invasive species, has a great allelopathic potential on germination and growth inhibition of weeds. A study was conducted to determine the allelopathic potential of *A. altissima* shoot and roots extract on germination of *Avena sterilis* (L.), *Sinapis arvensis* (L.), *Hirschfeldia incana* (L.) Lagr.-Foss., *Urtica urens* (L.), *Triticum aestivum* (L.), and *Triticum durum* Desf. The order of weeds and crops that negatively affected from the leaf extract were *S. arvensis*>*H. incana*>*Avena sterilis*> *T. durum*> *T. aestivum*> *U. urens*. All *A. altissima* extracts inhibited seed germination of tested weed species. However, inhibition rates significantly varied among extract types. Extracts from both above and below ground parts of *A. altissima* showed different inhibitory effect on the tested weed species, but leaf extracts had slightly higher inhibition rates than that of the root and shoot extracts. Root extract had also inhibited germination of the tested weed species, but inhibitory effects were not as high as the leaf and root extracts. Plant parts containing higher level of ailanthone had stronger allelopathic capacity. Various parts of *A. altissima* had different level of ailanthone. Each extract type was applied at the concentrations of 0, 5, 10, and 15% on the Petri dishes to determine germination inhibition potential. Inhibition rate of *A. altissima* extracts increased with the increasing concentrations. The result of this study showed that a great deal of success could be achieved by incorporation of *A. altissima* leaves into soil to control weeds.

Keywords: *Ailanthus altissima*, allelopathy, germination, inhibition, weed control

The Effect of Different K^+/Ca^{+2} Ratios on Yield, Quality and Tip Burn on Strawberries Grown in Soilless Culture

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Abstract

Plant nutrient solutions are effective on yield, quality and physiological deformations of strawberries grown in soilless conditions. Nutrient solutions that enhances the yield and quality of plants grown in soilless conditions are optimized through anion-cation equilibrium, optimum K^+Ca^{+2}/Mg^{+2} and K^+/Ca^{+2} ratio. In this study, the effect of three different K^+/Ca^{+2} ratios (5.5/7.0; 5.0/7.0; 6.0/6.0) on some morpho-physiological features (crown diameter, chlorophyll index, leaf temperature), yield, quality (fruit weight, total soluble solids, firmness) and physiological deformation (tip burn) of Albion and Festival strawberry cultivars were investigated. Results showed that increasing K^+/Ca^{+2} rates had significantly accelerated “tip burn” rate. The highest yield, firmness and the lowest tip burn, on the other hand, were achieved from 5.5 / 7.0 ratio of K^+/Ca^{+2} treatment.

Keywords: *Fragaria x ananassa*, Cocopeat, Plant nutrient solutions.

Biochemical Characteristics of Different Strawberry Cultivars Grown in Mediterranean Climatical Conditions

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Abstract

Strawberry has the highest production potential among the small fruits in Turkey. Recent increase in strawberry production to 158.564 tons had made Turkey to third major strawberry producer country in the world. The reasons behind this increase may be underlined as its suitability to be produced economically in soilless culture, small family and greenhouse farming operations year around throughout the country. Berries in which strawberry is classified in are considered one of the very well-defined and accepted functional food group with remarkable importance. Besides fresh consumption, strawberry may be used as an industrial processed food i.e, jam, marmalade, fruit juice and jelly. Besides valuable nutrient content such as minerals, vitamins, and dietary fiber, strawberries are important source of polyphenolical phytochemicals (flavonoids, phenolic acid, lignin and tannins). Biochemical properties of fruits can differs according to variety, climate and cultural practices applied during production. In this research, total phenol (TPC), total anthocyanin content (TAC) and antioxidant activities (EC₅₀) of fruits derived from ten strawberry cultivars (Monterey, Albion, Benicia, Fortuna, Amiga, Camino Real, Festival, Rubygem, Camarosa, Osmanli) were analyzed. The highest and lowest values were detected and respectively listed as for TPC Camarosa (4490.7 mg GAE/kg FW) and Fortuna (2859.0 mg GAE/kg FW); for TAC Amiga (13.42 mg Cyd-3-glu/kg FW) and Festival (9.71 mg Cyd-3-glu/kg FW) and for EC₅₀ Albion (50.37 g DPPH/g FW) and Rubygem (39.02 g DPPH/g FW).

Keywords: Antioxidants, Cultivar, *Fragaria x ananassa*, Total phenol

BRUCELLOSIS: AN OVERVIEW

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Abstract

Brucella is transmitted by contact with fluids from infected animals such as sheep, cattle, goats, pigs. Brucella spp. is anaerobic, gram negative, facultative and intracellular bacteria. There are *B. abortus*, *B. melitensis*, *B. suis*, *B. canis*, *B. ovis* and *B. neotomae* in Brucella spp. All of them are known as human pathogenic except from *B. ovis* and *B. neotomae*. "*B. ovis* causes an infection which is specific for sheep. "*B. neotomae* has been isolated on few occasions and has never been implicated in human disease." Brucella is the most common zoonosis in the world. There are too many new cases reported annually. In many countries, the reason of major economic loss is caused from brucella. It is an important disease in many countries especially in the Middle East and Mediterranean countries. In the Middle East countries, *B. melitensis* infection of cattle is an important problem. All age groups can be infected by brucellosis. The incubation period changes from one week to several months. Fresh cheese is a source of infection in the France, Italy, Greece and the Central Asia. The main source of brucellosis is consumption of unpasteurized milk and dairy products. Meat is also a major source of infection, too. Brucella can survive for a long time at 4°C. In order to protect against the disease, the milk should be pasteurized before consumption. If pasteurization is not possible, the milk should be heated to a minimum temperature of 80-85°C, and temperature kept at least a few minutes. In addition, Brucella infects people via contact. Infection also occurs through respiratory system. Besides, due to the increase in international tourism and migration, Brucella has gained an attention again. Several countries are aware of the potential use of Brucella as a biologic weapon. ("This work was supported by the Ahi Evran University Scientific Research Projects Coordination Unit. Project Number: MMF.E2.17.004")

Keywords: Brucellosis, brucella, dairy products

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Comparison of the Enzyme Inhibition Activities of *Origanum minutiflorum* and *Origanum sipyleum*

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Abstract

Essential oils are natural plant products that contain natural flavours and fragrances grouped as monoterpenes, sesquiterpenes and aliphatic compounds provide characteristic odours. *Origanum* L. is used as anti-diabetic, carminative, tonic, digestive, stimulant, expectorant, menstrual regulator, diuretic, and for respiratory problems such as asthma in folk medicine and also *Origanum* species are widely used as a spicy and herbal tea by local people in Turkey. The purpose of this study was investigate to anticholinesterase enzyme inhibition activities of two *Origanum* species; namely, *O. minutiflorum* and *O. sipyleum*.

O. minutiflorum and *O. sipyleum* collected from Muğla-Turkey. The aerial parts were hydrodistilled for 3 h using a Clevenger type equipments. Anticholinesterase activities of essential oils of two plants were tested against acetyl-cholinesterase(AChE) and butyryl-cholinesterase(BChE) enzymes by Ellman method. According to result of acetyl-cholinesterase(AChE) and butyryl-cholinesterase(BChE) enzyme inhibition activities, essential oil of *O. minutiflorum* showed 35.45±1.25%, 71.88±1.56%, inhibitions respectively at 200 µg/mL concentration As for, the essential oil of *O. sipyleum*exhibited 22.78±1.79% and 60.95±1.39% inhibitions against AChE and BChE enzymes.

Keywords:Anticholinesterase, *Origanum minutiflorum*, *Origanum sipyleum*, essential oil, enzyme inhibition

Antioxidant Activity of Polysaccharide Extracts From Two Truffles: *Terfezia olbiensis* and *Terfezia leptoderma*

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Abstract

Truffles are popular and valuable food sources in all over the world. They are preferred in many countries due to their aroma and flavour. In addition to that, truffles are rich in protein, amino acids, fatty acids, minerals and carbohydrates. The aim of this work was investigate to antioxidant properties of polysaccharides of two *Terfezia* species; namely, *T.leptoderma* and *T. olbiensis* collected from Turkey. *Terfezia leptoderma* and *Terfezia olbiensis* were collected different forest locations from Muğla to Denizli in southwest part of Turkey. The polysaccharides were isolated from *T.leptoderma* and *T.olbiensis* by extraction with distilled water and ethanol precipitation. Antioxidant activities of extracts were performed by five complementary tests systems i.e. β -carotene linoleic acid, DPPH free radical scavenging, ABTS cation radical scavenging, Cupric reducing antioxidant capacity (CUPRAC) and metal chelating assays. According to β -carotene linoleic acid assay, DPPH free radical scavenging and cupric reducing antioxidant capacity (CUPRAC) results polysaccharides of *T.olbiensis* exhibited highest activity; $91.23\pm 0.46\%$, $69.32\pm 1.93\%$, inhibitions and 1.65 ± 0.05 absorbance value respectively at $800 \mu\text{g/ml}$ concentration, In addition to that, polysaccharides of *T.leptoderma* was showed highest activity in ABTS cation radical scavenging, metal chelating assays; $87.08\pm 0.63\%$ and $89.24\pm 1.25\%$ inhibitions respectively.

Keywords: Antioxidant, *Terfezia leptoderma*, *Terfezia olbiensis*, polysaccharide, truffle

Acknowledgement: This study is supported by a grant (114Z644) from The Scientific and Technological Research Council of Turkey (TÜBİTAK).

Production and Characterization of Chitosan-Capsaicin Burning Edible Films

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Abstract

Chitosan is a natural polysaccharide derives and obtained from deacetylation of chitin which exists in the shells of shrimp and crab as well in the cell of mushrooms and anthozoans. Chitosan has been widely used in edible film technology in food and pharmaceutical industries because of its nontoxicity, biocompatibility, biodegradability, antioxidant and antimicrobial properties. Although, chitosan films can form an excellent oxygen barrier, it cannot be a moisture barrier due to it is not water resistant. Some materials can be added to chitosan films to improve the water solubility. Capsaicin (trans-8-methyl-N-vanillyl-6-nonenamide) is the active and pungent ingredient of chili peppers. It is poorly water soluble, colorless and highly volatile molecule. Capsaicin has been used in pharmaceutical applications such as anti-inflammatory, antiobesity, anticancer and analgesic. Also, it has been used as an additive in food industry. When combined with human diet, it can reduce absorption of fat and increase the fat burning metabolism. However, due to capsaicin strongly disturbs to stomach, its applications are limited. In the present study, chitosan-capsaicin blend films including different amount of capsaicin were prepared to overcome these problems. SEM, FT-IR and TGA analysis were conducted for characterization of obtained composite films. Also, mechanical and optical properties, contact angles analysis and antioxidant properties were determined. This study revealed that biodegradable edible chitosan films were produced using capsaicin and used for further applications such as edible food packaging materials and food additives in food industry.

Keywords: Chitosan, Capsaicin, burning edible film

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Evaluation of Water Use By GIS and Remote Sensing: The Imambakir Water User Association Case in Harran Plain

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Abstract

Water is considered as the most critical resource for farming in the arid and semi arid regions of the world. It is not only a crucial entity for agriculture, but also for industry and socio-economic security. Although the water sources in arid/semi arid climates are limited, excess water use contributed to water table and salinity increases. This excess use blocks to provide water to new irrigation areas. Thus, water sources need a sustainable management. In this research, total water use and landuse of İmam Bakır Water User Association (WUA) were determined and evaluated by using geographical information system (GIS) and remote sensing techniques for estimating its current status of use. Landuses in study area which were observed with satellite images were 73.2% cotton, 12.4% second crop corn, 13.5% wheat, 9.7% uncultivated lands and 2.9% settlement. The total water given to area for irrigation was estimated $125.666.380\text{m}^3$, but the water needed for actual plant types was only $73.048.500\text{m}^3$. The calculations were undertaken by employing SPOT satellite images and Penmann Monteith model. Differences of total and real needed water was $52.617.880\text{m}^3$. Due to this excess water use about 13154 ton salt was added to soil annually. On the other hand, it was estimated that the water table increased by 69,7 cm due to unsustanaibale irrigation management. Result revealed that the contemporary water use in İmam Bakır WUA is not managed in a sustainable way. Thus, for estimation of water use in Harran Plain GIS and remoe sensing techniques seem a useful tool for sustainable management of natural resources.

Keywords: Excess water use, salinization, Water table increase, GIS

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Nematicidal Activities of Four Plant Extracts Against White Tip Nematode, *Aphelencooides Besseyi* Christie, 1942[#]

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Abstract

Aphelencooides besseyi is known white tip nematode of rice. Seed borne nematode is occurred grain damage as amorphous, small, cracked and discoloured, and thereby causes economically important yield losses. Hot water treatments of seed, resistant or tolerant cultivars and chemical controls are effective control methods against *A. besseyi*. The negative human health and environmental impact of nematicide used for nematode control is intensively increasing. For this reason alternative methods of reducing nematicide are being developed. One of the effective methods is using plant extracts. The aim of this study was to determine ethanol extracts of plants of *Salix babylonica* L.(Salicacea), *Isatis glauca* Aucher ex Boiss.(Brassicaceae), *Cardaria draba* (L.) Desv. (Brassicaceae) and *Sisymbrium sophia* L. (Brassicaceae) were evaluated against *A. besseyi*. Four plant extracts at different concentrations (1000 ppm, 500 ppm and 250 ppm) were tested in vitro conditions. The ethanol extracts of *C. draba* and *S.sophia* caused up to 80 % of mortalities of *A. besseyi* at 1000ppm for 72 h. These findings suggested that ethanol extracts of *C. draba* and *S.sophia* explored as natural potential nematicides.

Keywords: *Aphelencooides besseyi*, mortality, plant extract, nematicidal activity

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Biological Characteristics of Vermicomposts

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Abstract

In this review, biological quality criteria of vermicomposts were presented considering vermicomposting microbial characteristics, human/animal pathogens, plant pathogens, enzyme activities and effects of vermicompost applications on soil microbiological parameters. It must be known the quality standards of materials that is used as organic fertilizer and organic soil amendment. All of quality criteria of thermophilic conventional composts of cow manure that most commonly being used have been determined and known widely. However, quality criteria of vermicomposts, a high quality organic material, is still unknown in details. There are physical, chemical and biological parameters determining the quality criteria of vermicomposts. Biological parameters are decisive factors on vermicompost quality both for the vermicompost end product and vermicomposting process. Superior qualities of vermicomposts are based on its microorganisms content. Vermicomposting is a mesophilic and biooxidative process including very fast decomposition, humification, detoxification and sanitisation process and stabilisation of organic material by earthworms and intensive microbial activity. Vermicomposts, as an end product has characteristics such as rich microbial population, hormones, enzymes, plant grown regulators (humates) and bio-pesticide properties. Earthworms not only increase microbial populations on a media but also modify bacteria and fungi populations growth rates and distribution. The work was supported by the Ahi Evran University Scientific Research Projects Coordination. Unit. Project Number :ZRT.E2.17.019

Keywords: Vermicompost, organic fertilizer, microbial activity, patogen microorganism, organic waste

Effect of the Bioactivator Application on Fruit Quality under Different Irrigation Regime in 'Kabarla' Strawberry Variety

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Abstract

Strawberry quality is mostly effected by cultural application such as irrigation and fertilization. In this study, beside of full irrigation (IR100); 50 % (IR50), 75 % (IR75) and 125 % (IR125) were performed different level by drip irrigation. Also, bio-activator which named Comcat, is produced from seaweed and special wild plant. Applications were applied additional with irrigation levels. Their effects on fruit quality such as fruit size (diameter, length and weight), TSS, acidity, pH and ratio of TSS (Total Soluble Solid) with titratable acidity were investigated during active harvest period (March-May). As a result of this study, fruit size was completely determined by the growing period. All fruit size (diameter, length and weight) was found the lowest in May due to increasing temperature and decreasing plant vigor. While the Bio-stimulant application negatively affected the TSS content, the IR50 irrigation regime was increased statistical significantly. Application and irrigation regimes not influenced pH value; however, it was increased throughout progressive harvest period from 3.45 (April) to 3.78 (May). Sugar/acid ratio was statistical significant level increased with progressive harvest time and by lowered water supply. The highest sugar/acid ratio was found in May at IR50 plot with 19.3 value. Also, the results were related to correlation analyses. While the fruit size parameters were positively correlated with each other, these parameters were negatively correlated with pH and TSS which effected the eating quality.

Keywords: eating quality, sugar/acid ratio, water levels

Antioxidant Activity and Polysaccharides of the Desert Truffle

Picoa juniperi and *Picoa lefebvrei*

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Abstract

Picoa has been documented in areas spreading the Mediterranean to Middle East arid that is hypogeous desert truffle. *Picoa juniperi* and *Picoa lefebvrei* mushrooms naturally growing in Turkey were investigated in this study. Polysaccharides of edible *Picoa juniperi* and *Picoa lefebvrei* mushrooms extracts were obtained with hot water in this study. The antioxidant activities of polysaccharides of *P. juniperi* and *P. lefebvrei* were evaluated by using five complementary test systems; namely DPPH free radical scavenging assay, ABTS⁺ cation radical scavenging assay, β -carotene/linoleic acid, ferrous ion chelating and cupric-reducing antioxidant capacity. According to results, β -carotene linoleic acid assay, polysaccharides of *Picoa lefebvrei* and *Picoa juniperi* exhibited highest activity 75.99 \pm 1.74 and 89.70 \pm 1.81 % at 800 μ g/ml concentration. In ABTS⁺ cation radical scavenging assay, polysaccharides of *P. lefebvrei* and *P. juniperi* were showed highest inhibition 85.44 \pm 0.38 and 54.38 \pm 1.34 % at 800 μ g/ml concentration. In DPPH free radical scavenging of *P. lefebvrei* and *P. juniperi* were found to exhibit 34.28 \pm 1.28 and 36.46 \pm 1.28 % inhibition respectively. Metal chelating activity of *P. lefebvrei* and *P. juniperi* were found to exhibit 92.66 \pm 1.46 and 90.77 \pm 1.02 91% inhibition respectively. Cupric reducing capacity of *P. lefebvrei* and *P. juniperi* were found to exhibit 0.65 \pm 0.20 and 0.77 \pm 0.30 % inhibition respectively at 800 μ g/ml concentration. BHA and α -tocopherol were used as antioxidant standards for comparison of the activity.

Keywords: Polysaccharides, *Picoa juniperi*, *Picoa lefebvrei*, Edible mushroom, Antioxidant activity

Acknowledgements: This study is supported by a grant (114Z644) from The Scientific and Technological Research Council of Turkey (TÜBİTAK).

The Effect of Freezing Temperatures on Particle Size Distribution and Some Rheological Properties of Raw Milks From Different Species

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Abstract

The freezing of milk may cause the changes in the physico-chemical properties of milk. The effect of different freezing temperatures on the particle size distribution and rheological properties of goats, cows, sheep and buffalo raw milks is the objective of this work. In the study, goat, cow, sheep and buffalo raw milks were frozen at -18°C , -40°C and -80°C then thawed at room temperature. The particle size distribution of milk samples was measured by laser diffraction viscosity with rheological properties were measured by rheometer. The measured parameters by particle size analyzer were the volume of distribution (D4.3), uniformity of distribution (Span), and specific surface area of milk samples. The average particle size of cow's raw milk was different significantly ($p<0.05$) from the frozen ones. And the uniformity of distribution of the raw cow milk samples differed significantly ($p<0.05$). Besides the average particle size of goat milk samples frozen at -80°C were significantly different ($p<0.05$). There were not found any significant difference at the average particle size and the uniformity of distribution of sheep and buffalo milks. All raw milk samples were displayed a decreasing viscosity with an increasing shear rate. The raw milk samples showed the tendency the newtonian fluids. In case the freezing temperature decreased, the frozen milk samples tended to exhibit the pseudoplastic properties.

Keywords: Freezing, Goat milk, Cow milk, Buffalo milk, Sheep milk

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A Research On The Determination of Molecular Genetic Characteristics of Some *BemisiaTabaci* (Genn.) (Hemiptera:Aleyrodidae) Populations

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Abstract

Bemisia tabaci (Genn.) (Hemiptera:Aleyrodidae) is one of the most important insect pest in many crops around the world. The *mitochondrialcytochrome oxidase* subunit 1 (mtOI) gene has primarily been used for identification of several species within the *B. tabaci* complex. In this study, *B. tabaci* populations were collected from Aydın, Antalya, İçel, Adana and Hatay regions in 2004 and 2005 and determined status of biotypes by using mtCOI gene sequencing. The UPGMA phylogenic tree demonstrated that the cotton whitefly populations were consisted of B and Q biotypes. By the analysis, 32 polymorphic nucleotides were detected. Furthermore, no nucleotide polymorphism was identified within populations B and Q biotype group. In Hatay province, B biotype was settled in Dört Yol and Harbiye regions, whereas Q biotype was found in Kırıkhan and Hassa regions. Similarly, in Çukurova region (İçel and Adana provinces) while the B biotype was prevalent in Tarsus and Q biotype was localized in Ceyhan and Havutlu region. In Antalya province, Q biotype was present in Campus area, and B biotype was present in Gazipasa. In addition, all the samples from Aydın province were found as biotype Q.

Keywords: *Bemisia tabaci*, biotype, mtCOI, genetic groups, whitefly



A New Column For Protein Separation In Reverse Phase Chromatography (Rpc) And Polymer Analysis In Size Exclusion Chromatography (Sec)

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Abstract

Reverse Phase Chromatography (RPC) and Size Exclusion Chromatography (SEC) in High-Performance Liquid Chromatography (HPLC) are a widely used, fast and relatively inexpensive and particularly useful method of many separating mixtures.

In this study, the monodisperse-porous particles produced by a “modified seeded polymerization” technique were used as column-packing material for SEC analysis of polymers and RPC analysis of proteins. The micro-particles based on divinylbenzene were synthesized in the form of copolymer and then characterized by Scanning Electron Microscope (SEM) and Fourier Transform Infrared Spectroscopy (FTIR). In the first stage of the synthesis, the monodisperse polystyrene particles were obtained by dispersion polymerization and used as the “seed latex” and then characterized by SEM and Dynamic Light Scattering (DLS). The seed particles were swollen by a low molecular weight organic agent and then by a monomer mixture. The monodisperse-porous particles were obtained by the polymerization of monomer mixture in the seed particles. The separation behavior of the columns including the produced particles as packing material was investigated in RPC mode by using a protein mixture and SEC mode by using Polystyren standards (MW: 2.100 - 5.000.000). The chromatograms were obtained with different gradient program and different flow in RPC mode. The theoretical plate-number increased and the chromatograms with higher resolutions and lower separation time were obtained with the particles

Keywords: Protein Separation, Reverse Phase Chromatography (RPC), Polymer Analysis, Size Exclusion Chromatography (SEC)

Phospholipase Applications in Cheese Production

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Abstract

Phospholipase is an enzyme that hydrolyzes phospholipids releasing a variety of products, like for example lyso-phospholipids, free fatty acids, di-acylglycerols, choline phosphate and phosphatidates, depending on the site of hydrolysis. In cheese production, Lysophospholipids act as surface-active agents in the cheese curd, helping emulsification of water and fat during processing and reducing syneresis. Phospholipases are more specific and have little or no activity toward di- or triglycerides. As a result of phospholipid hydrolysis, flavor defects do not occur due to the mainly formation of palmitic, oleic, and stearic acids, which are non-volatile short chains fatty acids. According to the scientific studies the use of phospholipase is able to increase the yield of cheese and reduces the environmental impacts of cheese production. Protein and fat largely determine cheese yield. Depending on the milk composition, 75 to 78% of milk protein and 85 to 95% of milk fat are entrapped in the cheese curd. The remaining protein and fat are lost in the whey and, to a lesser extent, in the brine. Crucially in the production of pasta filata cheese fat losses occur in the hot stretching step, where the fresh curd is molded and stretched in hot water. The lysophospholipid–casein complexes should be studied to understand the mechanism leading to cheese yield improvements.

Keywords: Phospholipase, Cheese, Yield



Glycerol-Based Process Contaminants in Palm Oil

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Abstract

Palm oil is the most widely-used vegetable oil in the world. This tropical fruit is reddish in colour because of high beta-carotene content. There are two types of palm oils that can be produced from the palm fruit. First one is known as palm oil, and it is produced from the pulp of the fruit of the oil palm tree. Second type is palm kernel oil and it is produced from the mesocarp part of the fruit. Palm oil exposed to high temperatures may have changes in its lipid matrix which leads to the formation of 3-chloropropane-1,2-diol (3-MCPD) esters, additionally 2-MCPD and glycidyl fatty acid esters. 3-MCPD was assessed as "possibly carcinogenic to humans" by the International Agency for Research on Cancer. European Food Safety Authority also assessed the risks for public health of those substances recently and stated that those substances form during food processing, in particular, when refining vegetable oils at high temperatures (approx. 200°C). There are two methods using for determining the esters of palm oil. First one is direct method by using LC-MS/MS of the esters which offers high specificity, requires the availability of the complete set of standard materials and require very low LOD/LOQ for each single 3-MCPD fatty acid esters. Also it offers a limited robustness. The second method is indirect method by using GC-MS of the free 3-MCPD, it offers an increased robustness, involving hydrolysis and derivatization and it might induce chemical modifications of the analyte. In an indirect analysis, precision is impaired by hydrolysis, derivation and internal standards. In the scope of this study, 3- and 2-MCPD, their fatty acid esters, and glycidyl fatty acid esters occurrence during processes of palm oil and foods, its regulation, its adverse effects on human health, and analytical methods for determining those type of esters are reviewed.

Keywords: Palm oil, Glycerol-based process contaminants, Analytical methods, Regulation, Health effects

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Chemical Migration from Plastic Types of Food Contact Materials

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Abstract

Foods are exposed to contact materials during all steps passed from farm to fork. Food contact materials (FCMs) are defined as materials and articles intended to come into contact with foods including packaging materials, cutlery and dishes, processing machine, containers, materials and articles in contact with water for human consumption. In order to ensure that the use of FCMs and articles is safe, general requirements are set up in the European Union (EU) in Regulation (EC) No 1935/2004. Plastic materials and articles intended to come into contact with food are regulated by Commission Regulation (EU) No 10/2011. Annex I of Commission Regulation (EU) No 10/2011 contains the Union list of authorized monomers, other starting substances, macromolecules obtained from microbial fermentation, additives and polymer production aids. There are 885 authorized food contact material substances in the list. These listed substances called as “*Intentionally Added Substances (IAS)*” can be used to manufacture plastic materials, with the restrictions and specifications established in the list. The contamination of foods due to the release of chemicals from packaging materials can be originated from the substances used in their formulation (IAS) but also from interactions between different ingredients, degradation products or from the presence of impurities in the raw materials (so called “*Non Intentionally Added Substances-NIAS*”). Food contact materials must not transfer their components into the foods in unacceptable quantities. Therefore, substances used in the manufacture of FCMs are regulated with maximum limits that may migrate into foodstuffs without causing any health concerns. There are two migration limit set for plastic based materials and articles: *Overall Migration Limit* and *Specific Migration Limit (SML)* for individual authorized substances fixed on the basis of a toxicological evaluation. In the scope of this study, plastic type food contact materials are classified, and migration concept are explained, the regulations about FCMs and analysis method on chemicals migrated are reviewed.

Keywords: Food contact materials, Intentionally added substances, Non-intentionally added substances, Migration Limits, Regulations

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Sensory quality and food composition of fish crackers made from *Luciobarbus esocinus*

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Abstract

In this study, it was aimed to product of fish crackers using *Luciobarbus esocinus*. Based on the total dough, 1.05% salt, 1.90% sugar, 13% sunflower oil, % 1.62 egg, % 0,88 vinegar, % 13 butter, % 48,37 flour, were added and stirred until a homogenous mixture was obtained. For the purpose of adding groups into the dough mixture, two different groups of crackers were produced as A and B by adding fish meat at the rates of % 10 and % 20. The mixture was compressed in an extractor and baked. Nutriment composition (moisture, raw protein, raw oil, raw ash, carbonhydrate) and sensual quality of the samples that were acquired in the study were determined and the analyses were repeated for 3 times. Evaluating the data acquired as a result of chemical analyses in the study statistically; it was determined that the difference between these two groups was significant in terms of food composition ($p < 0,05$). Additionally, energy values of the products were determined respectively as 521,1—518,5 Kal/100 g in the groups A and B. As a result of sensual analyses which were conducted in this study; samples in the group A received the highest number of likes from the panelists among the products that were prepared experimentally.

Keywords: Fish cracker; *Luciobarbus esocinus*, Food composition, Energy value, Sensory quality.

Farinographic and Extensographic Properties of Quinoa Flour Substituted Wheat Dough

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Abstract

Today, consumers increasingly prefer natural and healthy foods in their diet. Quinoa is a pseudocereal which has high nutritional value and no gluten. Although the most of cereal based foods are produced mainly from wheat flour, partial substitution of wheat flour with quinoa flour improves the nutritional value of bakery products and satisfies consumers' demands for healthy food. However, it should be noticed that partial substitution of wheat flour with quinoa flour affects rheological properties of dough and accordingly quality characteristics of bakery products. In this study, wheat flour was replaced with 10, 20 and 30% quinoa flour, and farinographic and extensographic properties of quinoa flour substituted wheat dough were investigated. In comparison with the control sample, substitution of 20 and 30% quinoa flour decreased water absorption value significantly ($P < 0.05$). A significant decrease in development time was observed with the substitution of 30% quinoa flour ($P < 0.05$). 10 and 20% quinoa flour substitution improved stability of dough significantly ($P < 0.05$). No significant difference was found in degree of softening values among dough samples ($P < 0.05$). Mixing tolerance index values of 10, 20 and 30% quinoa flour substituted wheat dough were found to be significantly lower than the control dough ($P < 0.05$). We found negative significant correlations between substitution level of quinoa flour and water absorption ($R^2 = -0.715$), degree of softening ($R^2 = -0.718$) and mixing tolerance index ($R^2 = -0.709$) of dough, respectively ($P < 0.05$). A significant positive correlation was determined between substitution level of quinoa flour and stability ($R^2 = 0.822$) of dough ($P < 0.05$). According to extensogram data at 135 min, 20 and 30% quinoa flour substitution decreased resistance to extension and energy values of dough compared with control dough significantly ($P < 0.05$). Quinoa flour substitution also caused a significant decrease in extensibility of dough ($P < 0.05$). Although we found no significant correlations between substitution level of quinoa flour and extensographic properties of dough, negative but weak correlations were determined.

Keywords: Dough rheology, Extensograph, Farinograph, Quinoa flour, Wheat flour

The Bacteriocin As Nisin Has Inhibitor Effect On *Stapylococcus* Spp Isolated From Hatching Eggs

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Abstract

Bacteriocins are proteinaceous antimicrobial compounds that are active against closely related bacteria and, for some bacteriocins, against a wide range of bacteria. Lactic acid bacteria (LAB) bacteriocins are used primarily due to their potential application as biopreservatives in food and food products to inhibit the growth of food-borne bacterial pathogens. In this study, Antimicrobial effect of Nisin investigated on staphylococcus isolated from hatching eggs in poultry farm of Turkey. The 37 pathogenic test bacteria were incubated in Tryptic soy broth at appropriate temperature for 16-18 h. Broth culture of pathogenic bacteria (0.1 ml) was inoculated to petri dishes containing 20 ml of Muller Hinton for 24 h. Allowing the media to harden at room temperature for 15 min, wells of 5 mm diameter were made with a sterile cork borer and 30 µl of the Nisin solution was placed into each well. After 24 h incubation at 30 °C, the inhibition zones were subsequently examined and the diameter of the inhibition zone was measured with calipers in mm. The results showed that Nisin solution had inhibitory effect (17,75-19,05 mm inhibitor zone) on 97% of stapylococcus isolates. LAB and LAB metabolites likes bacteriocins may be useful to investigate hatching eggs for disinfection.

Keywords: Bacteriocin, Nisin, antimicrobial effect, stapylococcus, egg.

Determination of General And Specific Combining Ability Effects For Some Plant Vegetative Characteristics in Cotton (*Gossypium Hirsutum* L.)

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Abstract

In the breeding programs, determination of combining abilities are the important subject. In this study four cotton genotypes (Carisma, BA-525, PG-300 and Dorina) were used as parents, and these parents were crossed in 2014 by the half-diallel mating design to obtain crosses in all possible combinations. Four parents and their 6 F₁ cross combinations were planted in a randomized complete block design with three replications under the Amik Plain conditions in 2015. Data obtained from this experiment were analyzed by using SAS statistical computer software based on the Griffing's (1956) method II, model I. There were significant differences among F₁ cross combinations and their parents for seedcotton weight per boll ($P \leq 0.01$) and 100 seed weight ($P \leq 0.05$) characteristics, however, insignificant for plant height, number of node, number of monopodial branches, number of sympodial branch, and number of boll. General combining ability (GCA) variances were statistically significant at $P \leq 0.01$ for seedcotton weight per boll and 100 seed weight, but insignificant for other investigated characteristics. However, specific combining ability (SCA) variances were insignificant for the 100 seed weight characteristics too. Components of variance indicated that the GCA variance was higher than the SCA variance for all the characteristics except number of boll. These results showed that number of boll was controlled by non-additive gene effects, while all the other characteristics was controlled by additive gene effects. From the parental genotypes, BA-525, for plant height (2.394), number of node (0.286), number of boll (0.397) and seedcotton weight per boll (0.198); Dorina, for number of monopodial branches (-0.133) and number of sympodial branch (0.186); PG-300, for 100 seed weight (-0.150) appeared to be best general combiners, while from the cross combinations, Carisma x BA-525, for number of sympodial branch (0.452) and number of boll (1.507); Carisma x PG-300, for number of node (0.36) and number of monopodial branches (-0.163); BA-525 x Dorina, for plant height (3.743) and seedcotton weight per boll (0.419); BA-525 x PG-300 for 100 seed weight (-0.312) were found the best specific combiner. In the light of these results, it is said that these parent and cross combinations can be used in future studies to improve the mentioned characteristics

Keywords: Cotton, half diallel, combining ability, gene effects

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Utilization of Medicinal and Aromatic Plants in Dairy Products

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Abstract

There are more than 20000 medicinal plant used to provide different aroma, taste, odor and color for food products. Since the demand for natural food products grows constantly, the opportunity to use medicinal plant has been created. Medicinal and aromatic plant can be used in very different forms including raw, cooked, dried, pickle or in brine solution. In addition to their aromatic properties such as taste and odor, medicinal and aromatic plants can show functional properties including antioxidant, anti-inflammatory, antiallergic, antidepressive and antimicrobial according to the active ingredients. Because of those properties; they are used as food additives or dietary supplements. Thyme (*Thymus vulgaris*), coriander (*Coriandrum sativum*), mint (*Mentha piperita*), coconut (*Cocos nucifera*), cinnamon (*Cinnamomum*), rosemary (*Rosmarinus officinalis L.*), black pepper (*Piper nigrum*) and garlic (*Allium sativum*) are the varieties aromatic plant used commonly in dairy products like ayran, yoghurt, cheese and butter. In addition to their use for taste and aroma in dairy products, the extracts have also showed antimicrobial effects. Moreover, their use as natural antioxidants can provide preservation effect in foods. For example, thyme when used in butter production may show antioxidant activity, carthamidin obtained from the petals of the aspirin plant may be used as natural colorant in ice cream production. It is important that essential oil of thyme has indicated antimicrobial activity against *L. monocytogenes*, *S. aureus*, *L. sake*, *L. plantarum*, *Y. enterocolitica*, *P. acidilactici*, *P. pentosaceus*, *M. luteus* and mint, cumin, fennel and bay essential oils also showed activity against *Escherichia coli*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Bacillus subtilis*. This study was conducted to review the medicinal and aromatic plants that are used as preservatives, food additives i.e. colorant, and aroma compounds in dairy products.

Keywords: Medicinal and aromatic plant, dairy products



Non-Thermal Processes Applied to Milk

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Abstract

The demand for natural food products by consumers increases day by day. New technologies applied to food products continue to develop and result in innovations. It takes long time and lots of practice to change the processing step of food products. In dairy process, milk is processed without regarding final product. The most important of these processes are the pasteurization and sterilization process to ensure microorganism inactivation. While the studies provide microorganism inactivation at high temperatures, structural components of milk contents change and nutrient values decrease. For this reason, new methods applied with new technology have been developed. Without damaging nutrition value, it is possible to apply non-thermal processes to milk to ensure the desired inactivation of microorganisms. Non-thermal processes are Microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), reverse osmosis (RO), electrodialysis, impact electric field, high pressure application, ultrasound, ultraviolet and X rays. microfiltration, nanofiltration, ultrafiltration processes are applied according to membrane system and classified according to pore size. Membrane process is applied to separate bacteria and sports from milk. Pulse electric field and high pressure applications result in inactivation by damaging the cell membranes of microorganisms. Since those processes do not cause any change of the milk properties, they can be applied as alternative operations. It is possible to combine them with each other when they are not effective by themselves. This review is conducted to explain the advantages and disadvantages of non-thermal processes.

Keywords: Microfiltration, ultrafiltration, nanofiltration, ultraviolet, X rays. microfiltration



The Effects of Different Feather Plucking Methods on Meat Quality Characteristics and Shelf Life of Broiler Meat

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Abstract

Poultry meat is the most important source of low cost animal protein, rich in nutrients, minerals and vitamins. This protein source can be contain higher pathogenic and spoilage bacterial counts and it adversely affects human health. Live chicken feather, skin, feet and digestive tracts are clearly contaminating with microbial flora. Broiler carcass can be contaminated at several points throughout the processing operation during scalding, de-feathering and evisceration as well as cross contamination from other birds and processing equipment in slaughterhouses. This contamination affects some quality characteristics and shelf life on chicken meat. In this study was conducted to determine the effects of different feather plucking methods on the meat quality characteristics and shelf life of broiler chickens. 42-day-old forty male broiler (Ross 308) were used in the experiment. Twenty broiler were de-feathered by dry plucking machine and the rest of them with classic wet method after slaughtering. 5 fillet and 5 drumsticks from every treatment group were analyzed for pH, water holding capacity, color and texture (Warner-Bratzler shear value) from raw meat material during storage of 0, 3, 5, 7 day of shelf life. It was observed that, feather plucking methods had significant effect ($P < 0.001$) on the LAB (L: brightness, A: redness, B: yellowness) values of skin and meat. On the other hand, there is no significant effect on the water holding capacity of drumstick and fillet. pH value was higher for both fillet and drumsticks at wet classic method than dry plucking method for days of 3, 5, 7 day of shelf life. Shear value of fillet was influenced significantly by plucking methods on 3, 5 days of shelf life. It is concluded that dry feather plucking method may have positive effects on colour of skin and meat, shelf life of broiler meat.

Keywords: Feather plucking, meat quality, shelf life, shear value

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Kırsal Peyzaj Planlamada Agroturizm ve Organik Tarım İlişkisi

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ÖZET

Agro-turizm (Tarım turizm alternatif turizm olup son dönemlerde oldukça ilgi görmektedir. Agro-turizmde doğada var olan doğal ve kültürel peyzajın korunması, tanıtılması ve sürdürülebilirliği amaçtır. Agro-turizm yeni bir kavram değildir. Agro-turizmin gelişmesi organik tarım ve doğal çevreyi tahribat etmeden uygun rekreasyon olanakları esasına esasına dayanır (Kuo ve Chiu, 2006). Ayrıca agro-turizm sürdürülebilir yeşil alan veya çiftlik turizmi sağlanmasında fırsat sunar (Busby ve Rendle, 2000). Agro-turizm kırsal yaşam tarzlarının ve peyzajın muhafazasını sağlar (Ventura ve Milone, 2000). Organik tarım ve agro-turizm oldukça birbiriyle bağlantılıdır ve doğal turizmle Turizm ile ülkemizin doğal ve kültürel peyzaj varlıklarının değerlendirilmesi, hizmete sunulması ve bu faaliyetlerden kazanç sağlanması temel amaçtır (Che ve ark., 2005). Agro-turizm çeşitleri doğayla barışık olmakla birlikte, var olan doğal ve kültürel peyzaj değerlerinin korunmasını, tanıtılmasını ve sürdürülebilirliğini amaçlamaktadır (Privitera, 2010). Organik tarım çevreci yetiştirme kökenli devrimsel bir üretim şeklidir. Ayrıca organik tarımın temelinde sınırlandırılmış kimyasal madde kullanımının sınırlandırılmasıyla elde edilen yüksek kalite ile birlikte sağlıklı yiyeceklere olan ihtiyaç yatmaktadır (Privitera, 2010). Bu çalışmada da alternatif turizm türlerinden biri olan agro-turizmin kırsal peyzajla ve organik tarımla olan ilişkisi açıklanmıştır.

Anahtar Kelimeler: Kırsal peyzaj planlama, Organik Tarım, Agro-turizm.

Bingöl İlinde Bazı Kuru Fasulye (*Phaseolus vulgaris* L.) Çeşitlerinde Gözlenen Faydalı ve Zararlı Böcekler

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Özet

Dünya’da olduğu gibi Türkiye’de de önemli besin maddelerinden olan Fasulye gerek ülke tarımı gerekse ülke ekonomisinde önemli bir yeri olan yemeklik tane baklagil bitkisidir. Türkiye genelinde 898.197 da alanda kuru fasulye yetiştiriciliği gerçekleşmiş ve 235.000 ton üretim yapılmıştır. Doğu Anadolu Bölgesinde önemli bir yere sahip olan kuru fasulyenin Bingöl koşullarındaki ekim alanı 2.786 da, üretim miktarı 563 tondur. Ülke tarımında önemli bir yere sahip olan fasulyenin verim ve kalitesi üzerine etkili olan ışık, sıcaklık, iklim, toprak, mineraller, su ve pH gibi abiyotik (cansız) faktörler olduğu gibi zararlı böceklerin varlığı ve yoğunluğu fasulye üretiminde önem arz etmektedir. Bu nedenle Bingöl ilinde yetiştirilen fasulye çeşitlerinde faydalı ve zararlı böcekleri tespit etmek amacıyla yürütülen bu araştırma, Bingöl Üniversitesi Tarımsal Uygulama ve Araştırma Merkezi’ne ait arazide 2015 yılında gerçekleştirilmiştir. Nisan 2015 - Ekim 2015 tarihleri arasında yapılan çalışmada Aras-98, Yakutiye-98, Terzibaba, Mecidiye, Elkoca ve Kantar çeşitleri kullanılmıştır. Çalışmada buğday zararlılarından *Acanthoscelides obtectus*, *Callosobruchus maculatus* *Spodoptera littoralis*. ile birlikte faydalı böceklerden *Coccinella* spp. *Tachina* spp. *Chrysoperla carnea* gibi türler tespit edilmiştir. Bu alanlarda saptanan zararlı böcekler ile birlikte faydalı böceklerin varlığı ve yoğunluğu kimyasal mücadeleye alternatif olarak bilenen biyolojik mücadelenin potansiyeli hakkında fikir vermektedir.

Anahtar Kelimeler: Fasulye, Faydalı ve Zararlı Böcekler, Bingöl

Molecular Identification of Sooty Molds on Wheat Fields in Central Anatolia Region and Effect of Seed Germination

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Abstract

Surveys were conducted in wheat growing areas of Konya, Ankara, Eskişehir, Yozgat, Kayseri, Kırıkkale, Kırşehir, Aksaray, Nevşehir provinces in 2011-2012 growing seasons in Central Anatolia Region, Turkey. Black heads and black spots on leaves were seen especially during late surveys and the contamination rate in these fields was observed between 40-100%. Thirty six wheat samples were collected from the fields. As a result of isolation from heads, leaves and grains, 88 'Sooty Mold' isolates were obtained belonging to 5 different fungus genus. These fungi cause, known as black point, damage (discolored) grain which affect quality and marketability. In consequence of morphologic identification and DNA sequence analysis, isolates obtained from infected black heads and leaves were determined as *Alternaria alternata*, *Alternaria. chlamydosporigena*, *Alternaria infectoria*, *Alternaria quercus*, *Alternaria tenuissima*, *Alternaria triticina*, *Cladosporium cladosporioides*, *Cladosporium herbarum*, *Cochliobolus sativus*, *Epicoccum nigrum* and *Stemphylium sp.* The isolations were made from the grains observed black point, *A. alternata*, *A. infectoria*, *A. tenuissima*, *A. triticina*, *Cochliobolus sativus*, *Cladosporium cladosporioides*, *C. herbarum*, *Epicoccum nigrum* and *Stemphylium sp.* were determined. The most prevalent species was found as *Alternaria alternata* in the fields. In each wheat cultivar tested in inoculated seeds significantly reduced their germination.

Keywords: Sooty molds. Black head, Wheat, Molecular, Germination



Kombucha and Health

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Abstract

Kombucha is a fermented drink produced by fermentation of sweetened black and/or green tea with kombucha culture; it is known to have health benefits. The microflora of this fermented beverage is mostly consist of acetic acid bacteria (AAB) and yeasts. Depending on it's origin, lactic acid bacteria (LAB) are sometimes be also able to be found in the microflora. The production of kombucha and formation of its beneficial components are the result of the metabolic activities of this microflora. This fermented tea has been produced and consumed in the Far East for hundreds of years as a tradition; it is used as an adjunctive treatment for certain diseases. The interest in this tea has increased recently, and kombucha has spread worldwide. Its microflora diversity and metabolites are becoming important subjects of scientific studies. Although there are a few companies in Turkey that manufacture and market kombucha, there is no comprehensive scientific study on this subject. The liquid portion of kombucha is claimed to have various medicinal effects on human health. Recent studies have suggested that kombucha tea prevents paracetamol induced hepatotoxicity and chromate induced oxidative stress in albino rats. As kombucha tea is rich in compounds known to be strong antioxidants, it is expected to ameliorate liver damage. This beneficial effects of kombucha tea are attributed to the presence of tea polyphenols, gluconic acid, glucuronic acid, lactic acid, vitamins, amino acids, antibiotics and a variety of micronutrients produced during fermentation. The functional character of the kombucha should be investigated by a larger number of scientific studies. Co-use or self-use with various foods of this tea should be widespread.

Keywords: Kombucha, Health, Food



Microbial Content and Volatile Aroma Compounds of Kefir Supplemented Soymilk and *Bifidobacterium* spp.

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Abstract

Kefir is a fermented dairy product produced with metabolic activity of lactic acid bacteria and the yeast, had a unique aroma and refreshing taste. In recent years, the use of milk obtained from herbal products such as coconut, rice and soy bean as an alternative to the use of cow milk in the fermented dairy products has been investigated. The most remarkable of these alternative milks is soymilk, which is rich in high-quality protein, isoflavone, omega-3 fatty acid and dietary fiber. Nevertheless, some undesirable off flavor compounds in soymilk are seen as a disadvantage in terms of their use in food formulation. In this study, three kefir were produced using cow milk added soymilk and commercial starter kefir culture, in the production of two of the three kefir were used commercial kefir culture supplemented with probiotic strains (*Bifidobacterium lactis* and *Bifidobacterium longum*; respectively, SMK1c and SMK1g). The control kefir sample was also produced using only the cow milk and the commercial kefir culture. A total of four samples were examined for microbial content and volatile aroma compounds. According to this results, in the SMK1c and the SMK1g, the viability of probiotic strains was preserved during storage, moreover, their counts increased (from 5.95 to 7.25 CFU/mL and from 6.26 to 7.30 CFU/mL, respectively) since the third week of storage. And it has been observed that the 1-octen-3-ol, the 2-penten-1-ol, the 2-heptenal and the 1-hexanal which are undesired compounds in the soymilk decrease significantly by fermentation. The undesired aroma compound in the SMK1g sample was detected less compared to the other samples supplemented soymilk. This study demonstrated that soymilk and *Bifidobacter longum* can be used together in fermented dairy products such as kefir. Co-use of them is considered to be a good alternative for functional food production.

Keywords: Kefir, Soymilk, *Bifidobacter longum*

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Evaluation of Environmental Impacts of Alcoholic Drink Industry focus on Cleaner Production: A Study for Wine -producing Firms in Nevşehir

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ABSTRACT

Environmental analysis of the alcoholic drink industry shows that the main effluents of the sector are wastewater and organic solid wastes. Such effluents are characterised by large seasonal fluctuations in volume and composition and are often discarded with little or no treatment. This mainly originates from various washing operations during the crushing and pressing of agricultural products, as well as rinsing of fermentation tanks, barrels and other equipment or surfaces. The effluent produced contains various contaminants, such as ethanol, sugars, organic acids, phenolic compounds, etc. The environmental impact of wastewater from the alcoholic industry is notable (i.e., pollution of water, degradation of soil and damage to vegetation arising from wastewater disposal practices, odors and air emissions resulting from the management of wastewater) mainly due to the high organic load and the large volumes produced. The treatment and management of this wastewater causes a considerable apprehension, especially considering the environmental restrictions required to discharge into water bodies. Efficiency of all management practices for such effluents from facilities depends on an effective pollution prevention approach that lowers the amount of the whole of resource consumption and wastes. To achieve such goals, the implementation of pollution prevention measures, cleaner production, and low-cost treatment technologies are required. Implementing cleaner production in alcoholic drink industry prevents or minimizes environmental impacts through the product life cycles from raw material to be a product until final disposal. In particular, winery wastes could be an alternative source for obtaining natural antioxidants. Moreover, wine waste can be potentially used as soil conditioner or for fertilizer production. The objective of this work is to investigate the most significant environmental impacts derived from the alcoholic drink industry (especially wine production) and its waste generation and to characterize the present strategies for the waste management. In addition, on site observation was examined to evaluating environmental impact of wine facilities in Nevşehir during this study. In this sense, the wine-producing firms in Nevşehir, includes small producers, whose yearly waste production and financial resources may not be sufficient to warrant advanced technological treatments.

Keywords: alcoholic drink industry, cleaner production, winery, Nevşehir



Antioxidant activity and heavy metal contents of *Castanea sativa* pollen from Giresun

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Abstract

The objectives of our study were to examine (i) pollen spectrum (ii) antioxidant activity and (iii) the effectiveness of bee pollen as a bio-indicator of the presence of heavy metals in the environment by comparing results. Pollen analysis and antioxidant activity were done according to the relevant literatures. In the present study, bioaccumulation and biosorption of heavy metals in sample was studied and 20 heavy metal concentrations in sample collected from Giresun (Turkey) was determined by using ICP-MS Spectrometer (Model Bruker 820-MS). According to the palynological investigation, the botanic origin of samples is *Castanea sativa* Miller. The hydrogen peroxide scavenging activity (in terms of SC₅₀), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC₅₀), total phenol content (TPC), total flavonoid content (TFC) and metal-chelating activity (%) were found as 25.86 µg/mL, 72.25%, 52.15 µg/mL, 3163.85 mg GAE/100g, 118.59 mg CAE/100g and 41.51%, respectively. For comparison of these results, Butylated Hydroxy Anisole (BHA), Butylated Hydroxy Toluene (BHT) and α-Tocopherol (TOC) were used as standard antioxidant compounds. From the results, the sample was observed to be contaminated with most of heavy metals (Al, As, B, Cr, Cu, Fe, Mn, Ni, Te, Tl, U, Zn) to a lesser or greater extent while some heavy metals (Ag, Bi, Co, Cd, Ga, Mo, Pb, and V) were never encountered. Finally, our results indicate that pollen sample was effective in assessing the rating of heavy metal contamination in the environment. We would like to thank Giresun University's Scientific Research Unit (Project No. FEN-BAP-A-140316-80) for the financial support.

Keywords: Antioxidant activity, bee pollen, *Castanea sativa*, pollen, heavy metal, biomonitoring.



Pollen Spectrum, Antioxidant Activity and Heavy Metal Contents of Three Chesnut Honeys

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Abstract

Recently, besides the comforts that technological developments and industries have provided for life, the size of the pollution it gives to the nature and the environment is increasing day by day. Waste and toxic substances causing environmental pollution are absorbed by plants and stored in their bodies. However, the heavy metals found in excess in the plant cause increasing the heavy metal concentration in the produced honey content and in the body of the bees. Honey in many cultures has been used as a food and medical product since the earliest times. The goals of study were to evaluate (i) pollen spectrum (ii) antioxidant activity and (iii) the presence of metals in honey samples. In the present study, some metal concentrations selected in three honey samples were determined. According to the melissopalynological analysis, samples are monofloral (>90) and the botanic origin of samples are *Castanea sativa* Miller. The hydrogen peroxide scavenging activity (in terms of SC50), ferric reducing antioxidant power capacity (FRAP), DPPH radical scavenging activity (in terms of SC50), total phenol content (TPC), total flavonoid content (TFC) and metal-chelating activity (%) were found between 251.99-258.64 µg/mL, 71.34-73.71%, 584.86-595.04 µg/mL, 93.82-173.15 mgGAE/100g, 5.51-8.29 mgCAE/100g and 36.73-36.86%, respectively. For comparison of these results, Butylated Hydroxy Anisole (BHA), Butylated Hydroxy Toluene (BHT) and α -Tocopherol (TOC) were used as standard antioxidant compounds. And, honey samples were also observed to be contaminated with most of metals (Li, Mg, Al, Ca, Cr, Mn, Fe, Ni, Cu, Zn, Rb) to a lesser or greater extent while some heavy metals (Te, Tl, U) were never encountered. However, Cd and Cs were only determined in Sample 1, and Pb was in Sample 3. Finally, our results indicate that there is a parallel between bee products and environmental factors, and the use of bee products as a sign of environmental pollution will be a useful tool.

Keywords: Antioxidant activity, biomonitoring, contamination, honey, metal, pollen.

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Quality Changes of Nugget Prepared From Fresh and Smoked Rainbow Trout During Chilled Storage

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Abstract

In this study, fish nuggets were prepared using fresh trout and smoked trout bites, packed in vacuum and stored at $2 \pm 1^\circ\text{C}$ for 27 days. Chemical [pH, total volatile basic nitrogen (TVB-N), thiobarbituric acid (TBA) and free fatty acid (FFA)], microbiological (total viable counts, psychrotrophic viable count and yeast and mold count) and sensory analyses were performed to determine the quality changes and the shelf life of fish nugget samples during the storage period. Total volatile basic nitrogen (TVB-N) for fresh nugget samples exceeded the limit value of 30 mg N/100 g fish muscle on the 24 days of storage. At the end of storage period, TBA values were 2.8 mg malonaldehyde kg^{-1} for fresh nugget samples and 2.1 mg malonaldehyde kg^{-1} for smoked nugget samples. Microbiological results showed that smoked nuggets samples resulted in a lower bacterial growth in fish nugget samples during the storage period. Sensory quality scores of smoked meat nuggets were significantly higher, than for fresh trout nuggets. The shelf life of fish nugget was found to be 24 days for fresh nugget and 27 days for smoked nugget samples according to sensory assessment results.

Keywords: Fish nuggets, Rainbow trout, Shelf-life

Investigation of Fertility in Zom Sheep Bred in Semi-Intensive Conditions and Survival Rate with Growing Performance of Their Lambs

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Abstract

This study was conducted to investigate fertility parameters of Zom sheep bred in semi-intensive conditions and to investigate survival rate and growing performance of their lambs during suckling period. This study was carried out at Research and Application farm of Dicle University Faculty of Veterinary Science. 110 Zom sheep and 5 mature rams were used in this study. Ewes were inseminated by the rams, fertilities of which were previously confirmed, in ordinary breeding season (July – August) by using hand mating method. Pregnancy, birth, single born, twin born, lamb yield, viability rates of Zom sheep and average number of lamb per birth were found 98.2%, 95.5%, 2.7%, 89.5%, 10.5%, 105.5%, 94.8% and 1.1, respectively. Average live weight (LW), withers height (WH), body depth (BD), body length (BL), chest width (CW), chest depth (CD), chest circumference (CC), and rump height (RH) of the lambs during suckling period were: 1st day [4.22 kg, 41.02, 18.97, 31.69, 11.24, 17.98, 40.97 and 41.24 cm], 15th day [9.32 kg, 46.23, 24.26, 39.53, 14.11, 22.92, 49.31 and 46.44 cm], 30th day [13.18 kg, 51.23, 28.32, 43.85, 15.34, 25.81, 56.32 and 51.42 cm], 45th day [15.92 kg, 52.92, 30.65, 46.89, 16.23, 27.58, 59.27 and 53.19 cm], 60th day [19.15 kg, 55.37, 32.82, 49.42, 17.11, 29.85, 63.21 and 55.55 cm] and 75th day [23.55 kg, 58.11, 34.42, 52.97, 18.31, 32.26, 66.45 and 58.37 cm], respectively. Effect of gender on live weights on 1st, 30th, 45th, 60th and 75th days; withers height on 15th day; body depth on 75th day; chest width on 1st and 60th days; chest circumference on 1st day; and rump height on 1st and 15th days was found statistically significant (($P < 0.05$) for Zom lambs.

Keywords: Zom sheep, Fertility, Survival rate, Growing performance

The Determination of Chemical Composition and Antifungal Activity of *Vaccinium myrtillus* L. Essential Oils

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Abstract

In recent years, studies on antibacterial, antifungal and antioxidant activities of essential oils obtained from many different plants have gained importance due to carcinogenic and teratogenic properties and toxicity problems of used the synthetic compounds. Therefore, it is very important to identify and use natural compounds with antimicrobial activity. This study was conducted to determine the essential oil components and antifungal activity of *Vaccinium myrtillus* plant. As a result of the study, 22 components were identified in the essential oil of *V. myrtillus* plant, and these components represented 100% of total essential oil. The main components of essential oil found as 1,8-cineole (41.07%), β -linalool (12.72%), α -Pinene (12.17%) and myrtenol (6.48%). Also within the scope of the study was tested antifungal activity of essential oil on plant pathogenic fungi [*Fusarium oxysporum* f. Sp. *Radicis-lycopersici* (Sacc.) W.C. Synder & H.N. (FORL), *Sclerotinia sclerotiorum* (Lib.), *Alternaria solani*, and *Verticillium dahliae* Kleb.]. In the tests, essential oils were used in doses of 1, 2, 4, 8, 10 μ L/petri dose. *V. myrtillus* essential oil inhibited the mycelial growth of *A. solani*, *S. sclerotiorum* (Lib.), FORL and *V. dahliae* plant pathogenic fungi 61.38%, 100.0%, 80.36% and 57.91%, respectively. The study results showed that *V. myrtillus* essential oil has a strong antifungal activity.

Keywords: Antifungal, *Vaccinium myrtillus* L., essential oil

The Determination of Chemical Composition and Antifungal Activity of *Laurus nobilis* L. Essential Oils

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Abstract

This study was conducted with the aim of determining essential oil components and antifungal activity of *Laurus nobilis* L. *L. nobilis* leaves used were collected in 2016 in Antalya-Alanya District New Village. The collected leaf was dried in shade at room temperature and essential oil was obtained by hydro-distillation for 2 hours using Neos essential oils system device. The obtained essential oil was analyzed by gas chromatography/mass spectrometry (GC/MS). As a result of the GC/MS analysis, 39 compounds were identified and these compounds represented 100% of the essential oil. The main components of essential oil found as 1,8-cineole (50.68%), α -Terpinyl acetate (14.19%), 4-Terpinenol (4.07%) and α -Terpineol (2.90%). Also within the scope of the same study was tested activity of essential oil on plant pathogenic fungi [*Fusarium oxysporum* f. Sp. radicle-lycopersici (Sacc.) W.C. Synder & H.N.(FORL), *Sclerotinia sclerotiorum* (Lib.), *Alternaria solani*, *Verticillium dahliae* Kleb.] Essential oil was used at 1, 2, 4, 8, 10 μ L/petri dose. At the end of the study, *L. nobilis* essential oil inhibited 100% at 10 μ L/petri dose mycelium development of *A. solani*, *S. sclerotiorum* and (FORL) pathogens. The mycelial growth of the *V. dahliae* pathogen inhibited by 61.23% compared to control. As a result, this study showed that *L. nobilis* essential oil has high antifungal activity against plant pathogenic fungi.

Keywords: *Laurus nobilis*, essential oil, Antifungal, essential oil compounds

Tissue Culture Applications in Lettuce (*Lactuca sativa* L.)

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Abstract

Lettuce (*Lactuca sativa* L.) is a major fresh leafy vegetable and belongs to the *Asteraceae* family (Compositae). The focus of modern lettuce breeding objectives is to improve horticultural characteristics such as quality, resistance to early bolting and breeding for resistance to pests and diseases. These characteristics may be improved using biotechnology and gene transfer strategies. Tissue culture methods have proved successful in rescuing selected lettuce genotypes and producing seeds in a disease-free environment. And also overcome the limitations of *in vivo* techniques by shortening period of breeding programmes. The genetic engineering of lettuce requires a reliable and efficient tissue culture methods. Among these methods haploidization is of great interest for producing pure lines. Shoot organogenesis may aid the use of genetic engineering to improve important characteristics of lettuce. Embryo rescue is an important application for transferring the resistance to downy mildew, *LMV*, and beet western yellows virus from *L. virosa* and *L. saligna* into cultivated lettuce. Somatic hybridization via protoplast fusion has also been used to gain access to exotic, sexually incompatible germplasm. Propagation from axillary and apical buds of lettuce plants can also be routinely carried out. If propagation through tissue culture can be done efficiently on a large scale, it may be used to produce F₁ hybrid plants and fix the hybrid vigour. Somaclonal variation provides another source of genetic variability. Regeneration via Somatic embryogenesis has advantages for lettuces.

Keywords: Lettuce, Tissue Culture, Somatic embryogenesis, Haploidization, Shoot organogenesis, Somaclonal variation, Somatic hybridization

Determination of Effective Mutagen Dose for Lettuce (*Lactuca sativa* var. *longifolia* cv. Cervantes) Seeds

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Abstract

In plant breeding strategies induced mutagenesis has become an effective way of supplementing the existing germplasm and improving new varieties. Mutation can be induced by chemical and physical mutagens or by combination. The commercial importance and production of lettuce, which is the most popular of the local salad crops, is increasing in Turkey. Lettuce is an important vegetable commodity and in demand by the local markets throughout the year. This study was carried out to get database for mutation breeding studies on lettuce cv. Cervantes. For this aim, 0, 50, 100, 200, 300, 400, 500 and 600 Gray (Gy) doses of Co⁶⁰ (gamma-rays) were treated on lettuce seeds as a physical mutagen. 30 seeds were used for each dose. Thirty days after treatment, germination and shoot developing of cloves were determined. The Effective Mutagen Dose (EMD₅₀) calculated by linear regression analyses. According to results, 372.66 Gy dose was found as EMD₅₀.

Keywords: Lettuce, mutation breeding, Co⁶⁰, gamma ray, effective mutagen (EMD₅₀), *Lactuca sativa*

Method Optimization Studies on Inoculation and Isolation of the Causal Agent of Lettuce Downy Mildew (*Bremia lactucae*)

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Abstract

Lettuce downy mildew which is significantly threatening lettuce cultivation, with the effect of climatic changes causes crop losses in all the lettuce growing areas especially in season transitions. In order to breed resistant varieties, determination of the existing races and especially the most widespread race is important. There is no information about the races of lettuce downy mildew in Turkey. Therefore, studies to determine the downy mildew (*Bremia lactucae*) races was started in lettuce growing areas. For this aim, surveys of lettuce growing areas in Ankara were undertaken during 2016 growing seasons and disease samples were collected. The all samples were stored at -20 °C and -80 °C. Small leaf parts showing symptoms from the samples were dissected and spores were scraped by various methods (sterile distilled water, distilled water, tap water, and MS-Mineral Salt medium) and washed in a sterile glass Petri dish. The spore suspensions were obtained using three methods (keep at room illumination + room temperature, room illumination + stored in ice, darkness + room temperature). Preparations were made from the spore suspensions, sporangiophores and sporangia were observed under microscope before inoculation. In order to determine the suitable inoculation method, seedling, and detached leaf tests (blotter, floating, slide test and water agar methods) were performed. A series of petri plates and seedlings were kept in darkness at 13±1 °C for 24 hours and then at 13±1 °C with a 12-h photoperiod in the climate chamber and another series of assay were incubated at 18-21 °C until sporulation. Humidity of Petri dishes and soil of the seedlings and growth were regularly checked daily. Method improvement studies are going on.

Keywords: Lettuce, *Bremia lactucae*, Race, Downy mildew

Determination of antioxidant activity of *Verbascum stepporum* extract obtained with different solvents

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Abstract

Oxidative stress has been suggested to explain the mechanism of numerous diseases and antioxidants have been proposed to prevent cellular oxidative damage, therefore disease progression¹. Phenolic compounds exhibiting antioxidant properties are observed in different levels and types in various parts of plants. Phenolics have attracted increasing attention for their antioxidant behaviour and beneficial health-promoting effects.²This study was designed to determine antioxidant activity of methanol, buthanol, dichlorometane, water and hexane extracts of *Verbascum stepporum* and their phenolic-flavonoid compounds. The extracts were screened for their possible antioxidant by DPPH and ABTS free radical scavenging, reducing power. The methanol and buthanol extracts of the plants exhibited significant antioxidant activities determined by different assays. *Verbascum stepporum* showed higher activities in antioxidant assays. This study shows that methanol and buthanol extracts of *Verbascum stepporum* have higher antioxidant activities than dichlorometane and hexane extract.

Keywords

Verbascum stepporum, Antioxidant, oxidative stress

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Effects of Width and Depth of Bell Drinker and Sex on Carcass Characteristics and Relative Organ Weights of Pekin Ducks

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Abstract

The purpose of this study was to determine the effects of width and depth of bell drinker and sex on carcass characteristics of Pekin ducks. Sixty male and sixty female ducklings (Star 53 H.Y., Grimaud Freres) were used. Each sex group was randomly allocated into two bell drinker groups (narrow bell drinker with 47 mm water depth and 48 mm water width and wide bell drinker with 78 mm water depth and 90 mm water width) each of 30 ducklings. Groups were located in floor pens (170 x 94 cm, width x length) each of 6 chicks. After final weighing at 42 day of age, feed was removed 6 h. Slaughter weight, hot carcass yield, percentages of neck, breast, legs, wings, skin with subcutaneous fat, abdominal fat, gizzard, liver and heart were determined. Sex affected the slaughter weight ($P<0.001$) and percentages of hot carcass ($P<0.05$). Wide bell drinker increased the slaughter weight ($P<0.001$), percentages of breast and wings ($P<0.01$), however decreased the percentages of skin subcutaneous fat ($P<0.01$). As a conclusion, wide bell drinker increased the slaughter weight and the percentages of breast and wings and decreased the percentages of skin with subcutaneous fat in both sex. If pool were not used in duck production, wide bell drinkers should be used.

Keywords: Pekin duck, Bell drinker, Carcass characteristics, Relative Organ Weights.



Determination of Aflatoxin Contamination in Hazelnut Oil

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Abstract

Aflatoxins are highly toxic and carcinogenic mycotoxins. In this study, the issue of whether the aflatoxins in hazelnuts have been transferred to the hazelnut oil during production or not has been investigated. The oil and oil cake of the hazelnut samples that contained aflatoxin at a high level were obtained for the study with extraction process. The aflatoxin concentrations in hazelnut, hazelnut oil and oil cake were measured, and how much of the aflatoxin in the hazelnut was passed into the oil and oil cake has been determined. Aflatoxin analysis was made by using the AOAC Method 991.31, which is one of the most viable high-performance liquid chromatography analysis methods in the analysis of aflatoxin in hazelnuts. The highest aflatoxin concentration was detected in the AFG1 among the hazelnut samples analyzed in the study, and AFB1, AFG2 and AFB2 follow this. In the hazelnut oil, the highest concentration was found in AFB1; and AFG1, AFB2 and AFG2 follow this. The rate of the transition of the aflatoxin to the oil is at 5.83% for AFB2, 4.38% for AFB1, 3.44% for AFG2 and 1.88% for AFG1. It was observed that aflatoxin remained in oil cake at a great rate. The maximum results of the analyses of hazelnut oils were as follows; AFB1: 0.93; AFG1: 0.52; AFB2: 0.47; and AFG2: 0.21 µg/kg. The hazelnuts that are used in hazelnut oil production industry are the ones that are not sold in the market with low quality. For this reason, it is highly probable that aflatoxin exists much in these hazelnuts. However, the results obtained in the analyses show that aflatoxin is passed to the oil at a very low level. Aflatoxin is not passed to oil and is accumulated in the oil cake.

Keywords: Aflatoxin, hazelnut, hazelnut oil, hazelnut oil cake, HPLC.

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Investigation of the Quality of Agricultural Irrigation Water in Diyarbakir Petroleum Field

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Abstract

The petroleum production activities are carried out intensively in Diyarbakir. There are fertile agricultural fields around these areas where petroleum productions are performed. The Diyarbakir has good agricultural potential in terms of soil, water and climate characteristics. Irrigation water quality is an important factor affecting agricultural production. In this study, 76 water samples were taken from 23 different irrigation water points around the petroleum fields between December 2012 and October 2013 in Diyarbakir. In water samples taken analyses such as pH, conductivity (EC), dissolved oxygen (DO), calcium (Ca^{+2}), magnesium (Mg^{+2}), sodium (Na^+), potassium (K^+), carbonate (CO_3^{-2}), bicarbonate (HCO_3^-), sulfate (SO_4^{-2}), chloride (Cl^-) analysis were performed. Residual Sodium Carbonate (RSC), Sodium Adsorption Ratio (SAR) and the Hardness values were later calculated. just one sample was classified as C_1S_1 class during spring samples. One sample was in C_2S_2 class during the summer samples and all other samples are set out in C_2S_1 class. According to the results of water samples average values for pH, EC, SAR, RSC, Hardness, DO, Ca^{+2} , Mg^{+2} , Na^+ , K^+ , HCO_3^- , CO_3^{2-} , Cl^- , SO_4^{-2} and P were determined as 7.91, 443.27 $\mu\text{S}/\text{cm}$, 1.29, 0.9 me/L, 204.18 mg/L, 7.47 mg/L, 71.08 mg/L, 6.48 mg/L, 7.44 mg/L, 3.47 mg/L, 3.13 me/L, 0.06 me/L, 1.08 mg/L, 0.54 me/L, 238.03 $\mu\text{g}/\text{L}$, respectively. Results of agricultural irrigation water in Diyarbakir oil field is evaluated in the desired range in terms of pH; safe for the EC; SAR values are very good (S_1); the RSC value class as good, Cl^- amount is <5 me/L, SO_4^{-2} value is between 0-20 me/L. According to these results, it is considered that petroleum reserves, oil drilling works and transportation of extracted oil have no negative effect on the quality of agricultural irrigation water.

Keywords: Irrigation water, Petroleum fields, Diyarbakir

SPE and determination by FAAS of heavy metals using a new synthesized resin in various real samples

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Abstract

In this study, a new resin, poly [phenyl thiadiazole methacrylamide-co-divinylbenzene-co-2-acrylamido-2-methylpropane sulfonic acid] (PTMAAm-co-DVB-co-AMPS), was synthesized. The resin was characterized by elemental analyzer, X-ray diffractometer, SEM and IR spectrometer. resin was used as solid phase sorbent for the simultaneous separation/preconcentration of heavy metals from various real samples prior to their flame atomic absorption spectrometric determinations (FAAS). The experimental conditions of the solid phase extraction (SPE) method such as pH, sample volume, flow rates of sample and eluent, type, volume and concentration of eluent and interference ions were examined. The detection limits (DL) of the SPE method for heavy metals were found to be (3s/b) in the range of 0.9–2.2 µg L⁻¹ (n = 21) and the relative standard deviation (RSD) was obtained as ≤ 2% (n = 11). The preconcentration factor was calculated as 75 for Cadmium, cobalt, chromium, copper, iron, manganese, nickel, lead and zinc. The SPE method was applied to the determination of analytes in standard reference material (CRM), in various water and dried vegetables.

Keywords: Heavy metals, Synthesized resin, Solid phase extraction, FAAS.

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The Relationships Between Diameter Stump Height (dst) and Diameter Breast Height (dbh) for Oriental Spruce, Scots Pine and Eastern Blacksea Fir in Artvin Region

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Abstract

Diameter breast height (dbh/ $d_{1.30}$) is the most basic tree variable that needs to be known in terms of forestry. Because, dbh is used as an independent variable in the calculation of most tree or stand parameters due to easy measurement and high correlation with other stand variables. In this way, you can have information about other characteristics of a known tree of dbh (such as height, volume and biomass). However, only the stumps can be found in the forest area where the trees in the stand are cut or overturned. In such cases, it is necessary to know or estimate the size of the dbh of the tree concerned in order to have knowledge of the tree which has been separated from the area. In this study, dbh-diameter stump height (dst/ $d_{0.30}$) relationships were investigated for each species separately in where the Oriental Spruce, Scotch Pine and Eastern Blacksea Fir species are mixed. For this purpose, 206 trees (69 L, 69 Çs and 68 G) were used which were cut from 23 different sample areas taken in full stocked Oriental Spruce-Scots Pine-Eastern Blacksea Fir (LÇsG) and Scots Pine-Oriental Spruce-Eastern Blacksea Fir (ÇsLG) stands spreading in Artvin. The relationship between dbh-dst was searched with the help of the dbh and dst for each species separately. According to the statistics analysis; the model that best explains the variability of the dbh is the power equations in all species. As a result, models with 95.2% in Oriental Spruce, %97.3 in Scots Pine and %97.7 in Eastern Blacksea Fir of variability of the dbh and standard error of 1.85, 1.73 and 1.63, respectively were obtained in the LÇsG or ÇsLG mixed stands. The models was considered to have an appropriate level of reliability for full stocked LÇsG and ÇsLG mixed stands in Artvin.

Keywords: Diameter breast height, Diameter stump height, Oriental Spruce, Scots Pine and Eastern Blacksea Fir



Estimation of carbon sequestration based on different methods: A case study of Ortaköy Forest Planning Unit

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Abstract

Carbon, also held as the primary responsibility of global warming, is present in soil, water, green plants, especially forests and on the air in the state of oscillation. Because of global treaties, the countries that have signed the Kyoto Protocol, Combating Desertification and Climate Change, have to do a number of actions about both pollutant gases and their reduction. Turkey is calculating the carbon sinks and revealing the current situation regarding the pollutant gases. Our country will have to make promises in order to keep or reduce the gases released to the air at a certain level in the future. For this reason, carbon pools must be accurately identified and calculated. In Turkey, the amount of carbon held in the forests, was first calculated based on the biomass account by using the coefficients developed by ASAN on the basis of biomass calculations for needle-leaved and broad-leaved forests. In the last term, methods and coefficients were updated according to the FRA-2010 guidelines, which separately calculate the carbon in the degraded areas and the carbon in deadwood. This study was prepared to reveal the differences between the two methods in Ortaköy Forest Planning Unit in Artvin Regional Directorate of Forestry. The total amount of carbon stock in the research area was calculated by using the Geographical Information Systems database with the aid of the stand parameters according to the two different methods mentioned. As a result, in the FRA method, since using method and biomass expansion factors are different from the Asan methods, in this method 5840 tons of carbon were found to be less. Unlike the other method, the carbon accumulation value in the degraded areas was found to be about 381 (22% of total carbon) thousand tons.

Keywords: Carbon Accumulation, Biomass, Ortaköy Forest Planning Unit, Artvin, Turkey



Estimation of Carbon Sequestration Based on Different Methods: A Case Study of Ortaköy Forest Planning Unit

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Abstract

Carbon, also held as the primary responsibility of global warming, is present in soil, water, green plants, especially forests and on the air in the state of oscillation. Because of global treaties, the countries that have signed the Kyoto Protocol, Combating Desertification and Climate Change, have to do a number of actions about both pollutant gases and their reduction. Turkey is calculating the carbon sinks and revealing the current situation regarding the pollutant gases. Our country will have to make promises in order to keep or reduce the gases released to the air at a certain level in the future. For this reason, carbon pools must be accurately identified and calculated. In Turkey, the amount of carbon held in the forests, was first calculated based on the biomass account by using the coefficients developed by ASAN on the basis of biomass calculations for needle-leaved and broad-leaved forests. In the last term, methods and coefficients were updated according to the FRA-2010 guidelines, which separately calculate the carbon in the degraded areas and the carbon in deadwood. This study was prepared to reveal the differences between the two methods in Ortaköy Forest Planning Unit in Artvin Regional Directorate of Forestry. The total amount of carbon stock in the research area was calculated by using the Geographical Information Systems database with the aid of the stand parameters according to the two different methods mentioned. As a result, in the FRA method, since using method and biomass expansion factors are different from the Asan methods, in this method 5840 tons of carbon were found to be less. Unlike the other method, the carbon accumulation value in the degraded areas was found to be about 381 (22% of total carbon) thousand tons.

Keywords: Carbon Accumulation, Biomass, Ortaköy Forest Planning Unit, Artvin, Turkey

Semolina Properties in Pasta

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Abstract

Pasta consumption in Turkey has been increasing day by day due to population growth and technology improvement. Pasta which is rich in vitamins, materials and nutrients, is a healthy, filling and affordable food. Pasta is also an important source of energy, since the complex carbohydrates exist in its structure are quickly turned into energy after fragmentation. Beside this, it is a semi-ready product which is highly available and can be easily prepared. The quality and suitability of raw materials' properties used in pasta production are directly related to the quality of pasta. In pure pasta production, only semolina and water is used. In pasta sector, in order to produce qualified pasta, mainly Triticum durum wheat is used. Features of durum wheat such as grain hardness, gluten power, grinding quality, yellow discoloration or browning are the criteria which have a direct impact on pasta quality. Since the amount of gluten in durum wheat is very high, it is well-suited for semolina production. In pasta production, durum wheat's hectoliter weight must be over 78 kg, weight of 1000 grains over 40 g, protein content more than 14% and hard grain ratio must be over 75%. Semolina produced from durum wheat must be of unique taste and odor. Furthermore, the moisture content of semolina must be max. 14.5%, the amount of the protein in dry matter must be min. 10.5%, the amount of ash in dry matter must be max. 1% and the acidity must be max. 0.05%. Fine semolina between 125- 530 micron has the most suitable size for pasta production and the pigment amount in semolina differs from 4 to 8 ppm. Unless suitable semolina is provided for pasta production, the desired quality of pasta couldn't be offered to the consumers.

Keywords: pasta, durum wheat, semolina

TILLING for Drought and Salt Tolerance (DST) Gene in Tetraploid Wheat

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Abstract

Drought and Salt Tolerance (DST) gene is one of the transcription factors in crops. Increase in panicle branching and grain yield were observed in rice having a mutation on *DST* gene. Additionally, increase in ear size and grain number were reported in wheat overexpressing mutant *DST* gene. EMS (Ethyl Methane Sulphonate) mutated rice plants with lose of *DST* gene function gained tolerance to drought and salt stresses. Insight of this information, *DST* gene had an important role both of yield and abiotic stress characters. Our aim was to screen Kronos TILLING population for *DST* gene of A and B homolog. TILLING is a reverse genetic tool used in functional genomics. *DST-A* and *DST-B* genes were cloned and sequenced from tetraploid wheat. Gene spesific primers were tested for TILLING screening. GeneMapper and Mutation Surveyor programmes were used to find mutations. 26 mutations were identified for *DST-A* gene (18 missense mutations and 8 silent mutations). T4-622 mutant line had a stop codon for *DST-A* gene at the 194th amino acid position glutamine was converted to stop codon (Q194X). 30 Mutations were identified for *DST-B* gene (19 missense mutations and 11 silent mutations). Mutations need to be confirmation and functional analysis in further studies.

Keywords: TILLING, Drought Salt Tolerance Gene, Functional Genomics

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Speed Breeding Technology in Laboratory for Spring Wheat

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Abstract

Classical breeding in wheat takes 5 or 6 year to develop a new variety. Recently, speed breeding technology giving an opportunity to breeders 5 or 6 harvest in a year was reported for many crops such as barley and wheat in greenhouse conditions. Our aim was to design a laboratory type breeding strategy using basic plant growth chamber. Tetraploid wheat seeds were germinated in room temperature. Germinated seeds were planted into vials having a soil and torf mixture supplied with fertilizer. Plantlets were transferred to pots after two or three leaves stage. Wheat plant were incubated in 24 hour full strength light and 25±1°C temperature. Plants were watered by regularly and supplied with macro and micro nutrients. Development of plants was healthy and speedy according to normal growth conditions. While booting stage was observed 37 days after, ears were ready to pollination in the 41st day. Seeds were harvested after 70 days later from germination. This new speed breeding technology was successfully applied to laboratory conditions to breed new wheat varieties or other crops. As a conclusion, five generations could be harvested per year using this new technology.

Keywords: Spring Wheat, Speed Breeding, Harvesting



Determination of Hepatoprotective and Antioxidant Roles of *Agrocybe cylindracea* Edible Mushroom Species Against CCl₄-Induced Experimental Oxidative Stress in Rats

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Abstract

The aim of this study was the evaluation of the protective effects and antioxidant role of *Agrocybe cylindracea* (DC.) Maire. (Agr), a mushroom, against carbon tetrachloride (CCl₄)-induced oxidative stress in rats. Four groups each containing six rats were designed as Control, only CCl₄, CCl₄+Agr 15% and only Agr 15 % groups. CCl₄ was received intraperitoneally twice a week as 0.5 ml/kg for 50 days. Dried Agr mushroom was added to daily food as 15 % (w/w) and rats were fed with this food in the same period. Hepatic and renal damage biomarkers such as aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH), creatinine (CRE), urea and lipid profile [triglyceride (TG), cholesterol (CHOL), LDL-cholesterol (LDL-c) and HDL-cholesterol (HDL-c)], antioxidant defence system constituents and malondialdehyde (MDA) parameters were evaluated to observe protective roles and antioxidant activity of feeding of the Agr supplementation against CCl₄-induced oxidative stress and toxicity in the brain, liver and kidney tissues of rats. The biochemical analysis showed a considerable increase in the serum AST, ALT and LDH enzymes in the groups CCl₄ and CCl₄+Agr 15% as compared to Control group. Agr supplemented diet significantly contributed the devastating effects of CCl₄ according to biochemical parameters. Additionally, MDA levels were significantly increased in brain tissues of only CCl₄ and CCl₄+Agr 15% groups relative to Control. Glutathione Reductase (GR) enzyme activity increased in brain and kidney tissues of rats fed with Agr supplemented diet. As a conclusion, the protective effects of Agr known as an edible mushroom in people were not observed in brain, liver and kidney, whereas it caused drastic complications in rats.

Keywords: Carbon tetrachloride, *Agrocybe cylindracea*, Malondialdehyde, Protective potential, Antioxidant role

Antioxidant and antibacterial potential of *Calycotome* aqueous extracts (Algeria)

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Abstract

Calycotome spinosa is a plant from Fabaceae family, it is one of the important plants of traditional systems of medicine. The aim of the present work deals with the extraction of the aerial part (stems and fruits) of this plant, as well as the evaluation of antioxidant and antibacterial properties of aqueous extracts. The obtained extracts were evaluated for their antioxidant activities using DPPH assay. The results revealed that the two aqueous extracts (stems and fruits) exerted an important free radical scavenging activity reached $83,41 \pm 0,4\%$ and $91,63 \pm 0,5\%$ respectively. The antibacterial activity of these extracts have been also investigated using the disc diffusion method against many pathogenic bacteria; the two extracts were active against the following Gram (+) bacteria: *Bacillus subtilus* (ATCC 6633), *Staphylococcus aureus* (ATCC 6538) and *Salmonella abony* (NCTC 6017) with inhibition zone diameters equal to 8.25 mm, 7mm, 7.75 mm respectively for aqueous stems extract and 13 mm, 25mm, 12.5 mm respectively for aqueous fruits extract.

Keywords: *Calycotome*, antioxidant, antibacterial activity.



The Expropriation of Agricultural Lands for Highway Projects

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Abstract

With the rapid urbanization and industry development, Turkey has witnessed a significant improvement of highway constructions. Recently, the share of highway travel as a percentage of total traffic has reached 92% for freight transportation and 95% for passenger transportation. Due to rapid developments of road transport in Turkey as it is in the world and developments in economic, commercial and social life makes the sector needs to have stronger legal infrastructure. The expropriation is one of important issues in this context. Expropriation is defined as the act of a government in taking privately owned property, ostensibly to be used for purposes designed to benefit the overall public. The most expropriated terrain type for highway projects is agricultural lands. This study aims to clarify the effects of agricultural lands on expropriation for highway projects. A case study was conducted in accordance with this purpose. The case study chosen is a highway under construction which is located in Dilovaş district, Kocaeli Province in Turkey. It connects the North Marmara Motorway with the Trans European Motorway, the State Highway (D100) and the Osmangazi Bridge. The project consists of a 10-km-long 2 x 3 highway, a 1-km-long viaduct, two tunnels, four interchanges and one toll area. The region where the project is located includes about 1,5 km of housing zone, 5 km of forest land and 3,5 km of agricultural land. A market research was conducted in the aforesaid region in order to determine the total expropriate value. The detailed information about the researches is presented in this study. It is concluded that agricultural lands account for 62% of the total expropriation value; 7% of the total tender price. A conclusion has emerged that both legal and technical infrastructure needs to be strengthened in the valuation process of agricultural land by reason of high effectiveness of the agricultural lands on total cost.

Keywords: Agricultural Lands, Expropriation, Highway Projects



The Use of Forest Lands in Road Constructions

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Abstract

The forest lands constitute about %27 (20.763 ha) of the total surface area of Turkey. 14% of all forests in the country are located in the Marmara region. The Marmara region is a zone in which a great part of all infrastructures of the country are situated. Major infrastructure projects, especially road projects are implemented in this region due to population density. Many of these projects are located in forest lands in the Marmara region. This study focuses on utilizing the forest lands in road construction projects. The major road projects in the Marmara region were examined within this context. Thus, the use of forest lands for the under-construction Gebze-Izmir Motorway project and the North Marmara Motorway project was investigated. The research steps are detailed in the study. As a result of the research, it has been revealed that about 16% of the road constructions in the first phase of the Gebze-Izmir Motorway project and about 77% of the first stage of the under-construction North Marmara Motorway are located in forest lands. Moreover, about half of the forest lands in Gebze-Izmir Motorway project and the almost all forest lands in the North Marmara Motorway project are fertile. In conclusion, it has been remarked that the use of forest lands have recently been increased in road constructions in Turkey.

Keywords: Forest Lands, Land Use, Motorway Projects, Road Constructions.



Encapsulation of berry seed oils by complex coacervation with proteins

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Abstract

There has been a growing interest in research, development and commercialization of functional food ingredients over the past decade. The addition of omega-3 (ω -3) and omega-6 (ω -6) polyunsaturated fatty acids (PUFA) to functional food ingredients and their consumption in dietary supplements have experienced significant increases. Fish oil, flax oil, camelina oil and more recently, algae oil, walnut, red and black currants, hempseed, sea buckthorn, lingonberry, blueberry, cranberry, cloudberry, blackberry and raspberry are the most commonly used sources of ω -3 fatty acids. To overcome some of the issues relating to stability of these oils, the use of microencapsulation technology has been explored. Microencapsulation, which involves the packaging of a core within a secondary material in small particles, is proving to be a successful strategy for protecting sensitive ingredients and enabling their delivery into foods. The main advantage of oil encapsulation is the protection afforded to the oil against oxidation during storage and processing. This is because the microencapsulated oils have a built-in barrier (i.e., the encapsulant) that isolates the oil from the surrounding environment. In food industry, there are several methods like spray drying, freeze drying, spray cooling-chilling, spinning disk and centrifugal co-extrusion, extrusion, fluidized bed and coacervation can be used to form a variety of capsules through the process of encapsulation. Coacervation is one of the oldest and most widely used encapsulation techniques. The process includes the electrostatic attraction between 2 biopolymers of opposing charges, and coacervates formation occurs over a narrow pH range. The coacervation process has been classified into simple and complex coacervation. In case of simple coacervation there is only one polymer whereas complex coacervation involves the interaction of two oppositely charged colloids. This review aims to highlight high potential usage of complex coacervation for berry seed oils in functional food and nutraceutical industry.

Keywords: Microencapsulation, berry seed oils, complex coacervation

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Impact of Tourism Development on Coastal Landscape: Decline of Agriculture Areas and Natural Vegetation

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Abstract

Seacoasts support high natural resource diversity. Therefore, they need to be analyzed in a multidimensional way for the sake of sustainable resource use. Turkey's Mediterranean coast has diverse land cover types that create space and that provide resources for many different land uses. These landscapes have suffered from land use/land cover transformations in the forms of natural-to-anthropogenic change categories. As far as land uses on the Mediterranean coasts are concerned, tourism has a special importance. The impact of tourism on Mediterranean landscapes is crucial since coastal areas with high landscape quality are threatened by tourism-oriented land demand for development. Serious increase in the coverage of built-up areas has been observed in Turkish Mediterranean coasts (secondary housing, marine resorts, etc.) due to domestic and foreign tourism demands in the last 30 years. This type of change causes serious decline in agricultural areas and the natural areas on the coast. The aim of this study is to demonstrate development of tourism in the form of expansion of building patches. Expansion of building patches over agriculture areas and over natural vegetation was mapped and quantified. For this purpose, remotely sensed satellite data was used for mapping and change detection in the coastal zone.

Keywords: Mediterranean, coast, landscapes, land cover, land use, tourism

EVALUATION OF GRAIN PROCESSING WASTES AS A FUNCTIONAL FOOD

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Abstract

Solid and liquid wastes are produced in large quantities throughout the production, processing, distribution and consumption in the food industry. These wastes are either immediately destroyed which cause serious environmental pollution or are regarded as animal feed. However several studies have reported that wastes can be assessed as a source of dietary fiber and antioxidants after applying thermal treatments for stabilizing and improving the shelf life. Grain processing wastes mainly include wheat germ, wheat bran, oat bran, and corn tassel.

Wheat germ and also wheat germ oil have high nutritional value because it nourishes the new wheat plant. It contains 25–30% protein of high biological value, 10–12% fat, 42–45% carbohydrate, 16% sugar, and 4–5% mineral content. It is known that wheat germ is highly rich in vitamin E, thiamin, riboflavin and niacin. In addition wheat germ oil is a valuable source of unsaturated fatty acids ; mostly linoleic and linolenic acid. Wheat and oat bran are the conventional dietary fiber sources. They are reported to promote colonic mucosal health due to increase fecal weight and reduce transit time. Rice bran is a nutritionally valuable by-product of rice-milling process. It has considerable potential as human food because it contains oil, proteins, B group vitamins and essential minerals. Rice bran oil is a good source for unsaturated fatty acids. Corn tassel is one of the most common agricultural waste. It is a source of natural potassium , vitamin K, volatile oils and phenolic compounds. It is generally consumed as corn tassel tea in herbal medicine for diuretic and anti-inflammatory effects.

This review aimed to industrialize grain processing wastes which are harmful to the economy of the country as well as to the environment. They can be recovered to health beneficial products due to the high nutritional components.

Keywords: Food waste, Grain processing industry, Dietary fiber, Antioxidant, Herbal medicine

Plant Extract Loaded Electrospun Nanofibrous Mats for Various Purposes

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Abstract

Worries about health issues and environmental pollution encourage researchers to find new health and hygiene related products which will play important roles in sustainability as well. It is estimated that there are around 250,000-500,000 species of plants in the World and only 1-10 % of these species are used as food and since the ancient times some plant extracts have been used for their therapeutic benefits, antimicrobial, anti-inflammatory, anti-oxidant and anti-cancer properties. They are able to inhibit a wide range of microorganisms without causing serious side effects to humans. Electrospinning is an exclusive method of producing nano-sized fibers by electrostatic forces with the advantage of a simple set-up. Polymer nanofibers have a big potential in many applications owing to their superior properties such as high surface area to volume, high porosity, small pore size and low diameter. Over the last decade there has been a great interest towards plant extract loaded electrospun nanofibrous mats. Adding extracts into nanofibers make not only the designed nanofibrous mats but the extracts much more functionalized as well. What is more their abundant availability, biocompatibility, low toxicity, green and environmentally friendly positions make them much preferable in food industry, pharmaceuticals, cosmetics, energy, filtration and biomedical applications including drug delivery, wound management, medical devices, tissue engineering. Several plant extracts such as *Centella asiatica*, green tea, *Garcinia mangostana*, *Tecomelle undulata*, aloe vera, *Grewia mollis*, chamomile, grape seed, cinnamon, lemongrass, peppermint, tea tree, thyme, lavender are used in obtaining electrospun nanofibrous mats for their antibacterial, anti-inflammatory, antioxidant, antifungal, anti-ageing, anti-tumour, anti-viral and some controlled thermo-mechanical properties. Studies demonstrate that plant extract loaded electrospun nanofibrous mats are effective and eco-friendly alternatives to their synthetic counterparts in the forementioned areas with a great potential. In many studies there were no significant difference between the morfologies of extract loaded and unloaded nanofibres.

Keywords: Plant extract, electrospinning, eco-friendly, therapeutic benefits



Molecular Characterization of *Grapevine Fanleaf Virus* (GFLV) and *Grapevine Rupestris Stem Pitting-Associated Virus* (Grspav) Vineyards in the Kırşehir

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Abstract

This study, was conducted to investigate the presence of *Grapevine fanleaf virus* (GFLV) and *Grapevine rupestris stem pitting-associated virus* (GRSPaV) which causes significant loss of yield and quality in vineyard areas. 49 specimens of 16 vineyards were collected from Kırşehir provinces and districts. Viral RNAs isolated from the samples were tested with viruse-specific primer sequences in a two-step RT-PCR test. RT-PCR analysis revealed that 49 samples collected were not infected with GRSPaV. The collected 49 samples, 5 were only found to be contaminated with GFLV. GFLV, was quite high in samples from Kaman (20.0 %), followed by Akcakent (10.0 %), Akpınar (8.3 %) and center (0.0 %). As a result, it was determined that GFLV is more common than GRSPaV in cases collected from Kırşehir provinces.

KeyWords:GFLV, GRSPaV, RT-PCR, Kırşehir

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Encapsulation and Its Application in Feed Additives

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Abstract

Encapsulation is new technology for the effectiveness, preserving the stability, slowly releasing or bioactivity and bioavailability of the active ingredients of food or feed additives. The most important encapsulation methods are spray drying, spray cooling/chilling, fluidized bed coating, nanoencapsulation, freeze drying, cocrystallization, coacervation, lyophilization, liposome entrapment, inclusion complexation, extrusion, emulsion and centrifugal suspension separation. The packaging materials which are named coating material, wall material, capsule, membrane, carrier or shell, which can be made of sugars, gums, proteins, natural and modified polysaccharides, lipids and synthetic polymers or some of their combinations. Encapsulation applies to active ingredients of food, nutraceutical and pharmaceutical or additives to increase shelf life, nutritive value, and digestibility and to preserve naturalness and stability. Recent development in nanoscience and nanotechnologies preventing physical and chemical of active compounds are provide valuable conditions by cooperation microencapsulation of bioactive compounds for developing healthier and reliable foods. Developed natural and modified polysaccharides, proteins, lipids and synthetic polymers as the coating materials supply condition to boost stability, bioavailability of the bioactive ingredients. Laboratory studies on encapsulation go on practice it can be developed physical, chemical and functional properties of the food in the near future. The main objective of this article is to discuss current research and developments and to increase stabilities of feed additives by encapsulation.

Keywords: encapsulation, additives, coated material, stability, bioavailability



Investigation of *Salmonella* spp. of Contamination, Infection Routes and Their Effects on Public Health in Chicken Meat

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Abstract

Chicken is cheap, healthy and nutritious food. Chicken that having an important role in human nutrition is an important source of development of microorganisms and pathogenic microorganisms, due to the appropriate composition and environmental conditions among animal foods. Therefore *Salmonella* serotypes are the most important ones among the pathogens isolated from chicken. In our study, 40 raw chicken samples taken from food enterprises producing poultry meat in the Aegean Region were examined analyses of *Salmonella* spp. by using the Vidas *Salmonella* (Biomeriux) kit procedure by the mini VIDAS instrument. *Salmonella* species of the production stages are transmitted to chicken meat in different ways and these microorganisms can pass to humans and cause important health problems with the consumption of these products by causing various infections or intoxications (poisoning) in person. In this respect, the complete fulfillment of all hygiene rules, from production to sale, of these products will also eliminate the risks that may arise from public health.

Keywords: Chicken, VIDAS, *Salmonella*, Public health



Determination of Milk Fat and Protein Content Curves by Using Different Models in Maltese Goat

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Abstract

The objective of this study was to determine the best model that describe milk fat and protein content curves. Data were obtained from a commercial farm that consist of 45 Maltese Goat in 2015. Models that were used to describe the shape of milk fat and protein content curves were Linear, Quadratic, Cubic, Power, Exponential and Logistic models. Coefficient of determination (R^2) and mean square error (MSE) were used for assesment of the models. R^2 and MSE values according to Linear, Quadratic, Cubic, Power, Exponential and Logistic models were found respectively, 0.905, 0.571; 0.987, 0.116; 0.994, 0.109; 0.788, 0.033; 0.934, 0.010; 0.934, 0.010 for the milk fat contegnt curves. R^2 and MSE values according to Linear, Quadratic, Cubic, Power, Exponential and Logistic models were found respectively, 0.823, 0.019; 0.973, 0.004; 0.998, 0.001; 0.665, 0.002; 0.836, 0.001; 0.836, 0.001 for the milk protein content curves. As a result of this study it can be said that Exponential and Logistic models were determined as the best model to represent the shape of the fat content curve because of the high R^2 (0.934) and the lowest MSE (0.010) values. Likewise Cubic model was the best model to represent the shape of the protein content curve. It had the highest R^2 (0.998) and the lowest MSE (0.001) values for milk protein content curve in Maltese goats. In Addition to this it has to be stated that Exponential and Logistic models had same R^2 and MSE values for both fat and protein content curves. So that there were no difference between power of models.

Keywords: Maltese goat, Lactation curves, Milk Composition, Qubic model

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Optimization of an Analytical Method and Application of Solid Phase Extraction for Determination of Pyrene Level in Smoked Meat

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Abstract

Polycyclic aromatic hydrocarbons (PAHs) usually occur when organic material such as smoked or grilled foods expose to incomplete combustion (1,2). During meat cooking processes, at temperatures in the range from 500 to 700 °C, high amounts of PAHs are found. PAHs include a large chemical compounds group known to cancer causing agents. Pyrene is belonging to these PAHs compounds. Different health and environmental protection organizations reported that several PAHs have endocrine disrupting properties and they are carcinogenic, mutagenic, and toxic especially pyrene (3,4). Because of their rather non-polar, lipophilic character they tend to bioaccumulate in organism. In addition, many epidemiological and toxicological studies emphasize that PAH exposure during neonatal and prenatal periods may result in adverse reproductive or developmental effects (5). This study was focused on cooking condition of Turkish grilled meat foods (namely, Adana kebab) using experimental design methodology and pyrene levels was determined by HPLC-MS. After cooking processes samples were extracted by potassium hydroxide in methanol/water (9:1; v/v) and hexane. These extracts were passed through into Amberlite XAD-2 (polymeric adsorbent) column, and then, the column was eluted with n-hexane/dichloromethane mixture (9:1). The eluents were evaporated near to dryness at 25-30 °C in water bath. The residues were taken with 1.0 mL of acetonitrile and the solution obtained was analyzed by HPLC-MS that parameters including mobile phase flow rate, column temperature and injection volume were optimized.

Keywords: pyrene, meat, experimental design methodology, HPLC-MS

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Copper Sorption on Clay: Application of Response Surface Methodology

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Abstract

Pollution is currently of great concern, because of the increased awareness of the potentially toxic and hazardous effects of elevated levels of these materials in the environment. Heavy metals including copper and cadmium are among the most and serious environment pollutants because of their high solubility in microelectronics, wood water and they are released into the aqueous system through a variety of sources such as metal plating and smelters, eluents from plastics, mining, textiles, paint industry, preservatives-producing industries and usage of fertilizers (1). Copper pollution especially, arises from different sources such as brass manufacture, copper mining and smelting, and excessive use of Cu-based agro-chemicals. Copper is recognized as the highest relative mammalian toxic and continued inhalation of copper containing sprays is linked with an increase in lung cancer among exposed workers (2,3). The potential natural adsorbent used for removal of copper from aqueous solution has been investigated under optimized conditions in this study. Batch mode experiments were performed to determine copper in aqueous solution for maximum metal adsorption capacity. Influences of parameters such as pH (2–8) and adsorbent dose (0.1–1.0 g) on copper adsorption were also examined, using Box–Behnken design matrix. Very high regression coefficient between the variables and the response ($R^2=0.9999$) indicates excellent evaluation of experimental data by second order polynomial regression model. The response surface methodology indicated that pH 7.29, contact time 65.49 min and biosorbent dose of 0.504 g were optimal for adsorption of copper by clay. On the basis of experimental results and model parameters, it can be inferred that the clay which has quite high biosorption capacity can be utilized for the removal of copper from some industrial wastewater.

Keywords: Copper, clay, response surface methodology

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Medicinal Plants Used in Yusufeli (Artvin) Region

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Abstract

This study was carried out in Yusufeli (Artvin) region with the aim of determining some plants used by local people for healing purposes. For this purpose, the field works have been done from June 2014 to September 2014. During this research, Yusufeli district, some villages (Öğdem, Altıparmak, Erenköyü, Köprügören) and plateaus have been visited and plant specimens were collected. Information on the uses of these plants was obtained by face-to-face interviews with local people and was recorded using a questionnaire form. The information for these plants, such as local names, their usages, used parts, methods of preparation have been recorded. Within scope of this study, a total of 26 medical plants belonging to 17 families were identified to be used for medical purposes by local people in the region. It has been recorded that their family, scientific, local names, used parts and used for healing plants which are used in traditional therapy.

Keywords: Medicinal Plants, Traditional Use, Artvin, Turkey



Bioactive Peptides in Milk and Dairy Products

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Abstract

Bioactive peptides are obtained by enzymatic hydrolysis, fermentation of milk by lactic acid bacterias and proteolysis with microorganism or plant derived enzymes. These peptides derived from cow, goat, sheep, mare, buffalo and camel milk posses multifunctional properties due to their varied nutritional and biological properties. Biological properties of peptides can be listed as cholesterol lowering ability, antihypertensive (Angiotensin-I Converting Enzyme (ACE) inhibitors), immunomodulatory effects, antimicrobial, antitrombotic, antioxidant, mineral absorption and/or bioavailability increasing and opioid activity. The activity of these peptides is depend on their inherent amino acid sequence and composition. A great variety of bioactive peptides have been found in fermented dairy products such as yoghurt, kefir and cheese. Recently, bioactive milk peptides can be produced in industrial scale technologies and commercial products can be launched on limited markets. These technologies are depend on membrane separation, gel and capillary electrophoresis and ion exchange chromatographic methods. Bioactive peptides of milk and dairy products are a source of health-enhancing compounds and the health effects of these compounds have a growing commercial potential. Hence, these peptides have different application in functional foods, dietary supplements and even pharmaceuticals as an excellent source of naturel ingredients.

Keywords: Dairy products, Bioactive peptides, Production, Functionality

Prevalence and Antibiotic Resistance of *Enterococcus* species in Food Products in Ankara, Turkey*

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Abstract

This study investigated the occurrence and antimicrobial resistance of *Enterococcus* species from 132 various food products seller in Ankara (fermented meat, raw meat, raw chicken meat, raw milk, and cheese). Standart bacteriological methods were used to isolate, identify and characterize *Enterococcus* species for antimicrobial resistance and confirmed by Becton Dickinson (BD) BBL Crystal Identification Systems and Gram-Positive ID Kit. *Enterococcus* was recovered from 47 (59.5%) of the 79 samples tested with predominance of *E. faecium*. other species isolated included *E. faecalis* 11 (13.9%), *E. hirae* 8 (10.1%), *E. gallinarum* 4 (5.2%), *E. avium* 4 (5.06%), *Enterococcus* spp. 3 (3.8%) and *E. durans* 2 (2.5 %) respectively. Antibiotic resistance of *Enterococcus* isolates were detected by Kirby-Bauer disc diffusion method for 10 antibiotics. *Enterococcus* isolates were resistant to cefquinon (89.8%), erythromycin (81%), enrofloxacin (44.3%), tetracycline (21.5%), ciprofloxacin (19%), ampicillin (16.4%), vancomycin (10.1%), chloramphenicol (5.06%) and gentamicin (2.5%). All *Enterococcus* isolates tested were susceptible to nitrofurantoin. Multiple antibiotic resistance to three or more antibiomicrobial drugs was 51.9 %. The MIC s (Minimum Inhibitory Concentrations) of erythromycin, cefquinon, tetracycline, ciprofloxacin, enrofloxacin, vancomycin, chloramphenicol and ampicillin were all determined by also observed using the broth microdilution method. Overall, the presence of multiple-antimicrobial resistance of *Enterococcus* especially from food samples tihat are ready to be sold to consumers is a serious concern. However, further study has to be conducted to determine the ultimate source of the bacterial contamination before specific food safety measures can be introduced.

Keywords: *Enterococcus*, Food, Antibiotic, Resistant

Acknowledgment: Our related work is supported by the Ministry of Food, Agriculture and Livestock, Research and Development Support Program, TAGEM / 16 / AR-GE / 28 Project Number.

Optimization of Manufacturing Parameters Used Safflower Oil Obtained By Solvent Extraction Method For Determination of Oil Properties

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Abstract

In this study crude oil from Remzibey-05 safflower seeds has been breeding in Turkey, was obtained by solvent extraction method. The maximum oil extraction rate of 30% was obtained at the end. Safflower oil has high unsaturated fatty acid content (91.17%) and highest fatty acids found was linoleic (C18:2) 56.82% and oleic (C18:1) acids 33.98%. Physicochemical properties of safflower seed oil were determined with the analysis and measurements. In addition, solvent-type (n-hexane, and dichloromethane diethyl ether), seed, seed-to-solvent ratio: ratio of solvent mixture (1:1, 1:2 and 1:3 (w/w)), stirring rate (200,400 and 600 rpm) and extraction time (1, 2 and 3 hour), the parameters of fat synthesis from solvent extraction method, which determined the effect of experimental design. According to the results of the ANOVA analysis of variance, the parameter that the highest degree of influence the production of safflower oil seed-to-solvent ratio, while the lowest effective parameter was extraction time.

Keywords: Safflower seed, Solvent extraction, Oil characteristics, Fatty acids, Taguchi method

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— Cappadocia/Turkey —

15-17 May 2017

Variation in Strobili and Cone Production among Clones in a *Pinus nigra* Seed Orchard

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Abstract

Black pine (*Pinus nigra* Arnold.) is one of the most important forest tree species widely used in individual ornamental plant or its ornamental plantation. Improved seeds produced from seed orchards have an important factor in success of the ornamental establishments. Number of female and male strobili, and mature cone were studied in a clonal seed orchard of Black pine for three consecutive years between 2013 and 2015. Large differences were found for female and male strobili, and cone productions among years and within year, while averages of female and male strobilus, and cone production were 145, 706 and 73 for combined years, respectively. Relations among female and male strobilus, and cone production changed for years and characters.

Keywords: Black pine, Flowering, Ornamental, Reproductive

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Economic Structure of the Farms in Irrigated Area of Bafra District of Samsun Province, Turkey

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Abstract

The main objective of the study is to determine the production capacity, capital structure, liquidity position and annual activity reports of the farms in right coast irrigated area of Bafra, a district of Samsun province. Data were collected from 128 farms supplying irrigation water from Bafra Plain Altinkaya Irrigation Union using a stratified random sampling procedure via a questionnaire. Conventional economic analysis methods were used to determine the economic structure of the farms. One Way Analysis of Variance was used to test the difference among the farm size groups. Research results showed that economic performance of large-scale farms were better than that of small and medium-scale farms. According to the research result, it was observed that the liquidity of small-scale farms was satisfactory but not willing to grow. While medium-scale farms had no liquidity problem, large-scale farms experienced serious liquidity problems. Research results also showed that profitability of large-scale farms was satisfactory but those of small and medium farms were not.

Keywords: Samsun, Bafra, Profitability, Liquidity, Solvency

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SCIENCES AND TECHNOLOGIES

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Structural Analysis of Sugar Beet Seed Production in Tr 83 Region

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Abstract

The main objective of the study is to determine the production capacity, capital structure, liquidity position and annual activity report of the farms growing sugar beet seed in TR 83 region of Turkey. On the other hand, the relations arising from “contract production” between farms and seed producing companies were also examined. Research data were collected from 82 farms producing sugar beet farms by using a questionnaire during the the time period of November- December 2013 and January- February 2014. Cluster analysis was used to classify the farms into the large and small size group. At the end of the analysis, 66 farms were classified into small-scale and 6 was large-scale farms. Conventional economic analysis approaches were used to determine the economic performance of the farms. Research results showed that small farms gained 212 thousands Turkish Liras of gross income. This amount was 1,02 million TL in large-scale farms. Agricultural income in small and large farms were 79 thousands TL and 390 thousands TL, respectively. Return on assets in small and large farms were 6,58% and 9,02%, respectively. Research results also showed that sugar beet seed producing farms were specialized in field crops and had greater irrigable fertile farmland suitable for 4-year cropping system.

Keywords: TR83 Region; Sugar Beet Seed; Economic Performance, Contract Farming

Irrigation Water Management Characteristics of Altinkaya Irrigation Union: The Case of Bafra Plain, Turkey

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Abstract

Irrigation water unions play a crucial role in providing water-efficient irrigation systems, preparing the agricultural lands to irrigation, and selecting and applying the most appropriate irrigation methods in agriculture. For this purpose, the main objective of the study is to determine the current management characteristics and the performance of irrigation water distribution of Altinkaya Irrigation Union between 2009 and 2013. Data were collected from the managers of irrigation union via a questionnaire and field observations. Performance indicators such as annual distributed irrigation water quantity per hectare, irrigation ratio etc. were used to determine the management characteristics of Altinkaya irrigation union. Research results showed that water payments had the highest share among the income items, while personal cost was the highest in total cost of union. In the research area, the quantity of irrigation water distributed to per irrigated land had been reduced over four years, indicating that irrigation water sources became a scarce production factor in the research area. Therefore, we are in the opinion that the excessive irrigation water usage should be controlled, efficient use of irrigation water among the farmers should be enhanced. In addition, revision of the current system using for pricing of irrigation water in the research area may reduce the management costs of unions.

Keywords: Bafra Plain, Irrigation water, Management Characteristics, Performance of Water Distribution



Association of single nucleotide polymorphisms in the *IGF1*, *TG*, *DGATI* and *MYF5* genes with carcass characteristics and meat quality in Holstein bulls

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Abstract

The trend of improving meat yield and quality has gradually changed from traditional selection methods to genotypic selection by utilizing molecular markers. Carcass characteristics and meat quality traits, which are under the control of polygenic inheritance, are economically important traits in livestock. A number of candidate genes have been identified as potentially associated with carcass traits and meat quality, varying on the specific trait analysed. Bovine insulin-like growth factor 1 (*IGF1*), thyroglobulin (*TG*), diacylglycerol-O-acyltransferase 1 (*DGATI*) and myogenic factor 5 (*MYF5*) genes play an important role in the physiology of lipid and muscle metabolism and are therefore considered as candidate genes for meat production traits in farm animals. The objectives of this study were to investigate SNPs in the mentioned genes and to evaluate whether these polymorphisms affected carcass characteristics and meat quality in Holstein bulls. Initially, the SNPs were detected by polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) method. A total of 400 Holstein bulls were selected randomly for the collection of genotype and the evaluation of phenotypic traits. Live weight, hot and chilled carcass weights, chilling loss, dressing percentage, carcass length, rump length, rump width, chest width, inner chest depth, marbling score, carcass pH, colour (L*, a*, b*, C* and h*) parameters of all animals were recorded. In addition shear force, cooking loss and water holding capacity were evaluated in 50 meat samples. *DGATI* significantly affected the dressing percentage ($P < 0.05$). Besides, the effect of *MYF5* on chest width and chest depth and the effect of *DGATI* on carcass length tended to be significant. The present results could therefore be indicative for future studies on carcass characteristics and meat quality.

Keywords: Cattle, Gene marker, SNP, Meat production, Carcass

Nutritional Diversity of Selected Wild Edible Plants Collected from Aegean Region of Turkey

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Abstract

Vegetables and fruits in general are an important category in food based approaches a source of multiple micronutrients. Within this group, gathered wild vegetables deserve greater attention several research show how they are easily accessible, culturally accepted and inexpensive sources of vitamins and minerals to many rural population groups. However, widespread knowledge of wild edible plants not provides much information on their nutritional significance and their diversity. The objective of the present work was to evaluate variability for dry matter, protein and mineral composition of nutritionally important and widely consumed wild edible plants in Aegean region of Turkey. The plant material comprises 17 edible plants collected from naturally found and widely distributed in the experimental area of Horticulture Department of Ege University. A total 17 edible wild species *Lactuca serriola* L., *Capsella bursa-pastoris* L. Medik., *Malva sylvestris* L., *Papaver rhoeas* L., *Urtica dioica* L., *Erodium cicutarium* (L.) L'Herit., *Chondrilla juncea* L., *Stellaria media* L., *Rumex patientia* L., *Taraxanum officinale*, *Allium ampeloprasum* L., *Plantago lagopus* L., *Sonchus oleraceus* L., *Daucus carota*, *Sinapsis arvensis* L., *Mentha pulegium* L., *Portulaca oleraceae* L. were evaluated for dry matter, protein, N (nitrogen), P (phosphorus), K (potassium), Ca (calcium), Mg (magnesium) composition. The data were subject to analysis of variance, and a Pearson correlation test was used to determine the correlations between dry matter, protein content and N, P, K, Ca, Mg compositions. Principal component analysis was performed on the result of examine compositions and the factor loadings, eigenvalues and percentage of cumulative variance were calculated, the patterns of relationships among nutritive element were shown two-dimension scatter plot. Multivariate analysis revealed considerable variation for the most of concentration and explained 81.49% of total variation accounted for three PC axes. The data reveal that selected wild plant provide significant nutrition and genetic background of species can play role in the nutritional value.

Keywords: Nutritional value, minerals, wild edible plants, principal component analysis

In Vitro Ovule Culture Of *Citrus* Genotypes Forevaluating Embryogenic Callus Induction Potential

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Abstract

Callus cultures of citrus have been exploited usefully in various ways like introgression of genes, genetic and epigenetic assessments, understanding transcriptional profiling, investigation of molecular mechanism of apomictic embryogenesis and several others. *Citrus* genotypes were manipulated *in vitro* for improvement. Ovules as explants from indigenous *Citrus* germplasm were cultured *in vitro* to determine their response towards embryogenic callus induction. The protocols were standardized for callus induction using salts and vitamins of MT with two combinations of growth regulators i.e. [2,4-D (100 μgL^{-1}) + BAP (100 μgL^{-1})] and [Malt Extract (0.5 gL^{-1}) + Kinetin (5 mgL^{-1})] called EBA and DOG respectively. The differential response, of the two media and genotypes under study were compared for *in vitro* callus induction. The induced calli were subsequently allowed to grow with frequent subcultures to evaluate the differences in regeneration potential. Responsiveness of ovules in medium EBA was significantly more than in DOG. The percentage of callus induction was found significantly higher (49%) in 'Valencia orange' when cultured in medium EBA while minimum (20%) was observed in 'Citrumelo-1452'. Color, morphology, quantity and growth habit of calli from each genotype was recorded at different levels. In general, more number of days to callus initiation and regeneration were observed in DOG than in EBA. Maximum days to callus initiation (67) were taken by 'Citrumelo-1452' while the minimum (41 and 39) were observed in 'Lemon' and 'Valencia orange' respectively. Likewise, more days to regeneration were taken in medium DOG as compared to EBA. 'Citrumelo-1452' took maximum number of days (84) to regeneration against the minimum (53) observed in 'Valencia orange'.

Keywords: *Citrus*, *in vitro*, callus induction, ovule culture, regeneration



Genome-Wide *In Silico* Analysis of *Hsp70* Genes in Melon (*Cucumis melo*)

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Abstract

Hsp70 protein group is a member of heat shock protein (Hsp) family which has essential roles in cellular development of all organisms. Hsp70 proteins support many folding processes of proteins in the cell and they are induced by stress factors mainly extreme heat or heavy metal conditions. Melon is a member of Cucurbitaceae family which is a model system to study vascular biology. Genome-wide studies are important to determine gene families in organisms. In this study, Hsp70 protein family members were elucidated by bioinformatics analysis in melon (*Cucumis melo*) genome which was published in 2012. Fourteen melon Hsp70 proteins were determined by multiple searches and all of them were acidic. Three main clusters were defined for these proteins according to phylogenetic tree by maximum likelihood method with bootstrap analysis for 1000 replications. Determined exon-intron structure of melon *Hsp70* genes by gene structure display server' and identified conserved motifs by MEME motif search tool for melon Hsp70 proteins were compatible with the defined clusters of constructed phylogenetic tree. Twenty-three pair of melon *Hsp70* genes displayed duplication events and these events may occur approximately between 23 and 420 MYA (million years ago) with the average Ka/Ks ratio of 0.0078. According to Blast2GO analysis; melon Hsp70 proteins were especially located in organel or cell part and their predicated biological role was metabolic processes. Besides, their predicated molecular function was binding activity. Alpha helix structure was dominant in the 3D structure of melon Hsp70 proteins by Phyre2 analysis. This comprehensive research is important to elucidate the evolution and structure of Hsp70 proteins in melon and it is basic for functional research.

Keywords: Melon, Hsp70 proteins, genome-wide identification



The Effects of Different Irrigation Levels on Pea (*Pisum Sativum* L. Bolero) Yield and Quality Characteristics under Unheated Greenhouse Condition

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Abstract

The purpose of this study was to determine the effect of deficit irrigation application and different irrigation levels on yield productivity and quality of green peas under unheated greenhouse conditions. The research was carried out at Agricultural Research Station of Yenisehir Vocational School, Uludag University. Irrigation water was applied to green peas as 1.00 (K1cp), 0.75 (K2cp), 0.50 (K3cp), 0.25 (K4cp) and 0.00 (K5cp) % (for control) of the evaporation that was obtained from A Class Evaporation Pan that corresponded to 2-Day irrigation frequency. Irrigation water, which was applied to crops, ranged from 70 to 464 mm while crops' water consumption ranged from 95 to 480 mm. Different irrigation levels that were used in irrigation application highly affected green pea yield productivity, pod length and width, the number of seeds in pods, the weight of 100 numbers of seeds and the number of dry matter. The highest yield was achieved with the application of (K1cp) as 5.6 t ha⁻¹. Crop yield productivity response factor (ky) was found as 1.14. The highest values for water use efficiency (WUE) and irrigation water use efficiency (IWUE) were found to be 0.02 and 1.59 kg m³ in the application of K2cp, respectively. The practice of K2cp can be recommended as the most effective irrigation level for the green peas to which drip irrigation is applied under scarce water resource and unheated greenhouse conditions.

Key words: Evapotranspiration, Water use efficiency (WUE), Yield and quality parameters, Irrigation scheduling, Deficit irrigation

Determination of Antioxidant Activities and Total Phenolic Contents of Grape fruit and Seed Extracts of Kilis Karası (*Vitis vinifera* L.)

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Abstract

In this study, the antioxidant activities of ethanol and acetone extracts of Kilis Karası grape fruit and seeds were investigated by various *in vitro* antioxidant assays including 2,2-diphenyl-1-picryl-hydrazyl free radical (DPPH[•]) scavenging, 2,2-azino-bis (3-ethyl benzthiazoline-6-sulfonic acid) (ABTS) radical scavenging activity and ferric reducing power. These various antioxidant activities were compared with BHA and Vitamin C which were known as standard antioxidants. For this purpose ethanol and acetone extracts were prepared at 20, 40 and 80 µg/mL concentrations from Kilis Karası grape fruit and seeds. Also total phenolic compound amounts were determined in the both extracts for grape fruit and seeds. DPPH free radical scavenging activities of fruit and seed extracts in acetone were compared with BHA and Vitamin C. Activities of samples and standards at the concentration of 80 µg/mL were ordered as follows Vitamin C > BHA > Seeds > Grape fruit by 94.7%, 94.5%, 89.4%, 4.77% respectively. ABTS radical scavenging activities were ordered as Vitamin C > BHA > Grape fruit > Seeds by 98.1%, 92.2%, 40.9%, and 16.9% respectively. Activities in ethanol extract at the concentration of 80 µg/mL were ordered for DPPH radical scavenging activities as Vitamin C > Seeds > BHA > Grape fruit by 97.0%, 96.5%, 94.8%, 18.9%; and for ABTS radical scavenging activities as Vitamin C > Grape fruit > BHA > Seeds by 96.7%, 94.4%, 93.8%, 81.2% respectively. In ethanol extract at the concentration of 80 µg/mL total reducing power were in the following order: Vitamin C > Seed > BHA > Grape fruit, in acetone extracts at the same concentration total reducing power were in the following order: Vitamin C > BHA > Grape fruit > Seed. Total phenolic compound content in ethanol and acetone extract were found for grape fruit as 21.7 and 156 mgGAE/g extract and for seeds 67.8 and 84.4 mgGAE/g extract, respectively. In both extracts Kilis Karası grape fruit and seeds exhibited high antioxidant activity and consist of high phenolic compounds. Therefore this natural product easily can use antioxidant agent for health.

Keywords: Grape, seed, phenolic content, antioxidant activity



***In Silico* Identification and Bioinformatics Analysis of *Hsp100* Genes in Melon Genome**

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Abstract

Melon is an important crop for human nutrition and belongs to Cucurbitaceae family. Its genome study was published in 2012. From that time, limited researches have been conducted to identify gene families in melon genome. Heat shock protein (Hsp) family members play significant roles for biotic/abiotic stress tolerance in plants. Hsp100 is one of the Hsp family member which is known as class of chaperones belonging to the AAA+ superfamily of ATPases. They have the ability to solubilize almost any protein that becomes aggregated after severe stress. In this study, a total of 130 CmHsp100 genes have been firstly identified in melon genome. Physical position, protein length and molecular weight of Hsp100s were determined using bioinformatics tools. CmHsp100 proteins were phylogenetically classified as six main clusters. Gene structure analysis and motif compositions were correlated with phylogenetic tree in which CmHsp100 genes with similar exon-intron structure were found in same clusters. 122 pair of melon CmHsp100 genes displayed gene duplication events which may occur about averagely 261 million years ago with the average Ka/Ks ratio of 1.192. 3D protein homology prediction of Hsp100 proteins were performed and many of them had above 90% confidence interval. Blast2GO analysis was used for determination of functional annotation of CmHsp100 proteins. Their predicated roles were biological regulation and located in organel or cell parts. In silico identification of miRNAs targeting Hsp100 genes was also performed. Interaction map of miRNAs and their targets was drawn with Cytoscape network analysis tool. CmHsp100-09 was mostly targeted transcript by three different miRNAs, cme-miR171e-a-g. Additionally, CmHsp100 genes were targeted by miRNAs from different organisms. Our results can open up new frontiers about understanding of the evolution and function of these important family members. CmHsp100 also provide basic resources for improving economic, agronomic and ecological benefit in melon and other species.

Keywords: Cucumis melo, Hsp100 proteins, Bioinformatics Analysis



Production and Functionality of Lactulose

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Abstract

Lactulose is a synthetic disaccharide that can be produced from lactose molecule by chemical, enzymatic or electro-activation synthesis. In recent years, lactulose has gain more and more attention due to they are potential candidates for many commercial applications in medical, pharmaceutical and functional food sectors. It is widely used in medical and pharmaceutical industries for the treatment of diseases such as tumour prevention, hepatic encephalopathy and etc. However, It can be used in fuctional foods such as prebiotic ingredients. Because of it goes through the colon without any changes in the intestinal mucosa and promoting the grow of bifidobacteria. In this study, some informations are given about production and functionality of lactulose taking into consideration of previous studies.

Keywords: Lactulose, Functional foods, prebiotic

Survey of Verticillium Wilt (*Verticillium dahliae* Kleb.) of Cotton and Pesticide Using Habits of Grovers in Kahramanmaraş Region

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ABSTRACT

In this survey, it is aimed to identify the distribution, incidence, severity and intensity of Verticillium wilt (*Verticillium dahliae* Kleb.) that is the most important disease of cotton in the plain of Kahramanmaraş. In order to achieve this goal, Verticillium wilt survey has been conducted in the most intensive cotton growing towns, Kahramanmaraş, Türkoğlu, Pazarcık, counties and in Nurdağı county in Gaziantep, Turkey. The present status of disease were evaluated by using the data of survey done from ball opening state to the harvest season of cotton. As a result of the survey Verticillium wilt was present in 62 fields of 78 cotton fields surveyed. A questionnaire, in order to identify the habit of using pesticide that cause an important problem in cotton production, has been directed to the farmers who were involved in cotton production in the plain. As a result, 43.07% of grovers chose the pesticide according to the suggestion of crop protection specialists, 83.07% of grovers pay attention on the effects of pesticide. During pesticide application, 33.85% of the grovers did not take any precautions. Of the grovers 52.3% applied pesticides after sunset. Only 36.92% of grovers dosage the pesticide according to the quantity written on the the label or propectus. Finally, 53.84% of grovers annihilate the empty petside bottles in an appropriate way.

Keywords: Survey, Verticillium wilt, cotton, Pesticide,

Effect of Ultrasound Pretreatment on Dehydration Kinetics of Ginger (*Zingiber officinale*) During Hot Air Drying

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Abstract

The objective of this study was to discover the effect of ultrasound (US) pre-treatment on dehydration kinetics of hot air dried ginger (*Zingiber officinale*). For this purpose, ultrasonic probe with 20 kHz frequency was used. Before US application, ginger samples were cut into size of 1 cm x 1 cm x 0,5 cm. Ultrasound pre-treatment was carried out in distilled water with %100 amplitude during 5, 10 and 20 minutes. The ratio of sample to water was 1:4 (w/v). After ultrasonic pre-treatment ginger samples were placed on drying oven trays. Drying experiments were carried out with hot air drying oven. Drying was performed at 0.3 m/s air velocity and at 60°C drying temperature. The weight of samples was measured at every 5 min during the first 30 min, after this 30 min the weight measurement of the samples are determined at every 30 min during the rest of the drying. It was found that ultrasound pre-treatment increased the drying rate of ginger samples. 20 minutes ultrasound pre-treatment resulted in the highest drying rate for the ginger samples. Data obtained from drying of samples in this study were fitted five mathematical model such as; Lewis, Henderson and Pabis, Page, Modified Page and Logarithmic models. Page and Modified Page models were the best models for samples drying at 60°C without US pre-treatment and 5 min US pre-treatment. Logarithmic model was the best model for samples exposed 10 min and 20 min US pre-treatment before drying. Ultrasound pre-treatment application increased the effective moisture diffusivity (D_{eff}) which describes the transfer rate of water during drying based on Fick's equation. The 20 min US pre-treatment increased the effective moisture diffusivity of the ginger from $3 \times 10^{-10} \text{ m}^2/\text{s}$ to $13 \times 10^{-10} \text{ m}^2/\text{s}$.

Keywords: Ultrasound, Dehydration, Ginger, Kinetic modeling, Moisture diffusivity

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Determination of the genotypic frequency distribution of *DGATI* K232A polymorphism in Holstein cattle

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Abstract

In the last decade, the availability of molecular biology techniques and the use of genetic markers have provided more effective selection than traditional phenotypic methods in cattle breeding programs. This kind of selection is based on the identification of genes or markers that may affect economically important traits in livestock. Among them, the diacylglycerol-O-acyltransferase1 (*DGATI*) gene, encodes the microsomal enzyme in the triglyceride synthesis. The *DGATI* gene maps at the centromeric end of BTA14. A non-conservative lysine-to-alanine substitution (p.Lys232Ala) in exon 8 has been proved to have a major influence on milk production, reproduction traits and intramuscular fat content in various cattle breeds. Hence, *DGATI* may be evaluated as a potential marker of economically important traits, such as milk and meat quality. The aim of this study was to determine the gene and allele frequencies and to evaluate the population genetic indices of the *DGATI* K232A in Holstein cattle. A total of 593 purebred Holstein cows and bulls, randomly selected from two different farms, were used in the study. The K232A polymorphism in *DGATI* gene was examined by the PCR-RFLP method. In this study, the *DGATI*-K232A genotype distribution was inconsistent with the Hardy-Weinberg Equilibrium (HWE). Deviations from HWE can indicate inbreeding, population stratification related to the sampling of the genotyped sires. Results indicated that, the K232A marker was mildly informative and the heterozygous genotype frequency was very dominant over AA and KK genotypes. In addition, AA genotype was absent in Holstein cows. Inconsistent results about the *DGATI* K232A genotype distribution have been reported in various cattle populations. The allele and genotype frequencies may vary among different breeds and even in different populations of the same breed. Hence, studies performed with higher number of animals would be desirable to do an adequate evaluation.

Keywords: Cattle, Gene marker, *DGATI*, Holstein



Determination and Bioinformatical Analysis of *sHsp* Genes in Melon

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Abstract

Small Heat Shock proteins (sHsp) or Hsp20s are ancient family of proteins and found in all domains of Archaea, Eukarya and Bacteria. As understood from its name, the molecular weight of these ubiquitin-like proteins are varied. sHsps are molecular chaperons against misfolding proteins like other Hsps and act as preventing irreversible protein aggregation. It has been reported that sHsps are first defense barrier in the cell against protein misfolding. Importantly, sHsps in plants response to heat and other variable stress factors. Hsp proteins have been identified in many organisms but there is a limited study related with determination of these important gene family members in Cucurbitaceae family. In present study, a total of 37 *CmsHsp* genes were found in melon genome. Amino acid length of *CmsHsp* proteins were ranged between 71 and 510 aa with the molecular weight of 8.4 and 56.6 kDa. The phylogenetic tree of *CmsHsp* proteins displayed 5 district classes which were compatible with their motif compositions and gene structure. Among the *CmsHsp* genes, 41 gene duplication events were determined with the Ka/Ks ratio of 2.62. It has been emerged that *CmsHsp-04*, *CmsHsp-25* and *CmsHsp-26* have more duplicated sHsps proteins in melon genome. Interestingly, *CmsHsp* proteins had only binding activity and played role on cellular processes. In addition, they were mainly settled on membrane and membrane parts. When compared to other Hsp family members which had dominantly α -helix structure, β -sheet structure was superior in *CmsHsp* proteins. Such a like study has been extended our knowledge about usage of sHsps in comparative and functional genomics researches.

Keywords: sHsps, *Cucumis melo*, Molecular characterization



Determination and Characterization of *Hsp40* Genes in *Cucumis melo*

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Abstract

Heat shock proteins (Hsp) are known protein family in plants and other organisms. The primary role of heat-shock proteins is to direct folding and refolding mechanisms of proteins which are newly synthesized or denatured. Hsp40 group of proteins are the members of Hsp family. All proteins in the Hsp40 group are characterized by a baseline J-domain wealth, thus they are also known as J proteins. The ATPase region of Hsp70 proteins, which are another group of Hsps, and the J-domain of Hsp40 protein interaction stimulates ATP hydrolysis. So, they create a complex with Hsp70 proteins and form a protein folding mechanism. Genome-wide attempts are informative for identification of Hsp gene family members in different organisms. However, no comprehensive research for Hsp40 protein group members in melon has been conducted yet. In this study, 117 Hsp40 protein family members were detected in *Cucumis melo*. The lengths of determined proteins were between 59 and 2213 aa. Their molecular weights varied between 6.6 and 242.6 kDa. miRNAs were targeted with different *CmHsp40* transcripts including CmHsp40-03, CmHsp40-15, CmHsp40-29, CmHsp40-40, CmHsp40-100, CmHsp40-102 and CmHsp40-105. In addition, the most common miRNA was miR5021 in melon. According to phylogenetic tree, 11 clusters were defined with the evolutionary closeness of protein families by similar motifs and exon–intron organization. Melon Hsp40 proteins were especially found in cell part, organelle or membrane. Cellular process and response the stimulus were their predicted biological function. Their mode of action was binding activity. This kind of gene identification studies open new perspectives to analyze functions of Hsp40 protein family members in plants.

Keywords: Hsp40, melon, genome-wide identification

Identification and Analysis of *Hsp60* Genes in Melon

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Abstract

Heat shock proteins, also called as stress proteins, found in all living organisms. They are produced by cells under normal and stress conditions. These proteins play also crucial roles for cell growth and survival. Primary structures of Heat shock proteins are highly conserved in all organisms. Hsp60 family of chaperones or chaperonins is key components of cellular chaperone machinery. They are the most conserved and most common family among molecular chaperons and are present in the cytoplasm, mitochondria, and plastids of all eukaryotes and eubacteria. In this study, it was aimed to determine and analyze Hsp60 proteins in melon (*Cucumis melo*) genome using bioinformatics tools. As a result of the analysis, 26 *CmHsp60* genes were found. The lengths of *CmHsp60* proteins were ranged from 93 to 1824 amino acids and %80 of these proteins were stable position. A total of 43 genes indicated gene duplication events. They were separated from each other before with average of 226 million years ago. The most duplicated ones were *CmHsp60-09* and *CmHsp60-12* genes. Gene structure and motif analysis were performed for all *CmHsp60* proteins. *CmHsp60* genes located in the same family in phylogenetic tree showed similar exon-intron and motif patterns. Based on 3D protein structure prediction analysis, α -helix structure was mainly observed in all proteins. To predict the function of *CmHsp60* proteins, Blast2Go analysis was conducted. Cellular, developmental, reproductive and metabolic processes were the main biological roles of these family members. They were also chiefly located in organelle, membrane and cell parts. *In silico* identification of miRNAs were performed by psRNATarget server. We detect 46 different plant miRNAs targeting the transcripts of *CmHsp60* genes. Identification and molecular characterization of these family members in melon provide a valuable information for the future comparative genomics studies.

Keywords: Hsp60, Chaperonins, Heat Shock Proteins, Melon, Bioinformatics analysis

Bioinformatics Analysis of *Hsp60* Genes in Cucumber Genome

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Abstract

Plants as sessile organisms are subjected to consistently changing stress factors such as drought, salinity, cold and hot temperatures and chemicals. Plants could not change their sites to avoid such stresses, but adapt morphologically and physiologically by some other mechanisms. Heat shock proteins (Hsp) are ubiquitous proteins that accumulated extensively in all organisms and widely involved in response to various stress factors. Hsp60 family (chaperonins) of heat shock proteins is key components of cellular chaperone machinery. Cucumber (*Cucumis sativus* L) is a model plant, which belongs to Cucurbitaceae family. Although cucumber genome was published in 2009, Hsp60 protein family members have not been determined yet. In this study, we have firstly identified 28 *Hsp60* genes in the cucumber genome. Protein lengths of CsaHsp60 proteins varied between 97 and 1823 amino acids with 10.7 and 20.3 kDa. *CsaHsp60* genes were mapped on 7 chromosomes of cucumber. The highest number of Hsp60 genes were located on Chromosome 1 with the number of 8. CsaHsp60 proteins can be classified into 5 groups based on phylogenetic tree. According to GO slim analysis, many of CsaHsp60 proteins had roles in cellular processes like biological regulation and cellular component organization. Almost all of CsaHsp60 proteins had binding function. CsaHsp60 proteins were especially localized in the cell part. Predicated 3D structures of CsaHsp60 proteins mainly displayed alfa-helix structure for 14 CsaHsp60 proteins which showed high homology. These comprehensive genome-wide analysis enable us to evaluate the biological function of Hsp60 protein family members in different organisms.

Keywords: *Cucumis sativus*, Hsp60, Chaperonin, Molecular characterization

Hypericin Isolated From *Hypericum Perforatum* Can Decrease The Adipocyte Differentiation

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Abstract

Hypericin is a naphthodianthrone, a red-colored anthraquinone-derivative, which, together with hyperforin, is one of the principal active constituents of *Hypericum perforatum* (Saint John's wort). Hypericin is believed to act as an antibiotic, antiviral and non-specific kinase inhibitor. Hypericin may inhibit the action of the enzyme dopamine β -hydroxylase, leading to increased dopamine levels, although thus possibly decreasing norepinephrine and epinephrine. Although anti-obesity effect of hypericin is well-known, the role of hypericin on adipocyte differentiation and transcription factors while adipocyte differentiation is not clear. The aim of this study is thus to identify and characterize the transcription factors in the process of adipocyte differentiation after the hypericin treatment. In this study, concentration of 0, 2.5, 5, 7.5 and 10 μ M hypericin were treated to 3T3-L1 pre-adipocytes in cell culture. MTT cell cytotoxicity, cell viability with trypan blue staining, Lactate Dehydrogenase (LDH) enzyme assay, triglyceride content assay, Glycerol-3-Phosphate Dehydrogenase (GPDH) activity, Oil Red O staining and mRNA levels of transcription factors (*PPAR γ* , *C/EBP α* and *SREBP-1c*) were investigated in hypericin induced 3T3-L1 preadipocyte cell line. Hypericin treatment decreased cell population growth of 3T3-L1 preadipocytes, assessed with trypan blue staining, MTT test and rising of LDH release proportion. Hypericin inhibited GPDH activity and intracellular triglyceride content in 3T3-L1 adipocytes in all treated .groups in a dose-dependent manner. Oil Red O staining indicated that hypericin inhibited adipocyte differentiation in 3T3-L1 adipocytes in all treatment groups. In this study, it was revealed that exposing 3T3-L1 preadipocytes and differentiating postconfluent preadipocytes to different doses of hypericin decreased *PPAR γ* , *C/EBP α* and *SREBP-1c* mRNA levels as compared with their controls without treatment in dose dependent manner. Although, reduction of *PPAR γ* mRNA level was statistical significant, this decrease was not significant in *C/EBP α* and *SREBP-1c* mRNA levels. This study demonstrated that hypericin treatment inhibited the adipogenesis through the down-regulation of transcription factors, especially *PPAR γ* . Alternative mechanisms may involve cell cycle arrest and the induction of apoptosis. Since hypericin is the main component found in *Hypericum perforatum*, the consumption of *Hypericum perforatum* may contribute to the maintenance of body weight and prevent the development of obesity.

Keywords: Hypericin, 3T3-L1, adipocyte, transcription factors, *PPAR γ* , *C/EBP α* , *SREBP-1c*

Fast Decomposition of the Polyethylene Glycol Terephthalate(PET) Solid Wastes by Catalytic Depolymerisation Method

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Abstract

This research work is conducted for recovery of the terephthalic acid from utilised waste PET bottles. Plastic garbages are the contaminants for the nature and for the human living environment. From the 19th century humans were produce except natural plastics and polymers, many new synthetic and derived plastics, like materials for technology today. Gathering of PET in the water and the lands, have toxic effects and bad view. PET wastes can supply energy direct by burning, or can be physically recovering again. But alternative way is chemical decomposition of polymer, with highest yields and obtaining of the terephthalic acid and the ethylene glycol. In this study there isn't an attempt to recover the ethylene glycol compound, this is a byproduct. UV-VIS spectra are for checking of the plastic bottle samples and FTIR spectral essays are analytical methods which gives results about chemical composition of the PET. Plastics recycling value reach over %99. The name PET in literature is the shortened form like polyethylene terephthalate, instead the scientific nomenclature polyethylene glycol terephthalate.

Keywords: PET, plastic wastes, polymer, spectral essay, yield, UV-VIS spectra, FTIR spectra

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Stabilization Methods of Wheat Bran

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Abstract

Wheat seed consists of 2-3 % germ, 13-17 % bran and 80-85 % endosperm on the dry matter basis. Wheat bran is a valuable by-product obtained from wheat milling which is a natural component such as dietary fiber, protein of high biological value, unsaturated fatty acids, B group vitamins and essential minerals. But poor storage stability of bran is a serious problem to be evaluated in the industry. This is due to high lipase activity in bran, which rapidly hydrolyzes the oil into fatty acids as a result it develops unpleasant odor, distinct bitter taste and become unfit edibly during storage in a few days. For this reason various stabilization methods have been applied for inactivation enzyme activities. The methods include, dry heat treatment, hot air steam drying, toasting, autoclaving, defatting and steaming, microwave heating, IR heating, antioxidant treatment and several packaging and storing methods etc. Especially wheat bran should be exposed to heat for a shorter time in the heat treatments applications. Otherwise the maillard reaction takes place and so baking, nutritional and sensory properties and acceptability of bran are reduced. The purpose of this review is to evaluate the traditional and innovative stabilization methods with the least effects nutritional and sensory properties of wheat bran.

Keywords: Wheat bran, Stabilization methods, Heat treatment, Sensory acceptability



Utilization and Future of Special Corn Types in Turkey

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Abstract

The corn plant is divided into seven varieties. The dent corn and flint corn, being the most common varieties of corn are intensively used as feed and silage. Besides, popcorn (*Zea mays* L. *everta*), sweet corn (*Zea mays* L. *Saccharata* sturt.) and waxy corn (*Zea mays* *ceratina*) being from special corn types are used as cooked as snack, fresh and canning using and sauce as appetizer respectively. Popcorn, which has become a traditional snack food in the country in the recent years is cultivated about 10.000 ha and consumed especially lovingly by children. Sweet corn is consumed as a fresh and canned food in the coastal areas, especially in the Aegean and Mediterranean regions. The demand for waxy corn consumption is increasing day by day throughout the country. In this research, the current status, use and development of specialized corn types in our country have been investigated. Increasing of new varieties developing and agriculture studies to meet demand for specialized corn types in our country (popcorn, sweet corn and waxy corn) will help to reduce the foreign dependency of our country's corn seed needs.

Keywords: Popcorn, Sweet corn, Variety, Waxy corn

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Effects of Climatic Changes on Aquatic Ecosystems

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Abstract

Recently, scientists have agreed major changes on aquatic ecosystems as a result of increase emission gases, chemical wastes, deforestation as well as climate changes. Global warming shows its impact on fresh water and marine environments as ice melting, coastal changes, sea level increase, evaporation in lakes, greenhouse effects, ocean asidity changes and rise, biological invasion and certain species abuncany and lack of biological diversity. Climate change can also cause rising up sea level as much as increase on sea temperature, hydrological change and deflection of rain, wind and water circlation. Human activities and global climate changes have exerted combined impacts on export of sediment, nutrients and pollutants from land to water source. Increasing nutrient input via rivers degrades water quaility and threatens on the aquatic ecosystems. All these changes have highly negative impacts on aquatic organisms. Accurate assesment of climatic changes in aquatic system can be conducted with multidisiplinary studies such as management, hyrography and ecology. From aqautic environmental management and assesment perspective, it is critical to monitor various spatial and temporal factors in aquatic environment.

Keywords: Climatic Changes, Aquatic Ecosystems



Assesing The Technical Efficiency of Farms Producing Wheat Seed And Its Determinants In TR83 Region, Turkey

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Abstract

The main objectives of this study are to evaluate the technical efficiency in wheat seed growing and to determine the factors affecting technical efficiency in TR83 region of Turkey. Data were collected from 72 wheat seed-growing farms by using questionnaire. Conventional economic analysis approaches were used for the economic analysis of the farms surveyed. Stochastic Frontier Analysis (SFA) was used to assess the technical efficiency at farm level and to estimated the parameters affecting technical efficiency. Efficiency analysis results revealed that technical efficiency in the study area ranged from 0.68 to 0.96 (mean 0.81). By eliminating the technical inefficiency, the sample farms will be able to reduce their amount of input use with a rate of 19% without any reduction in the amount of production. It was determined that other variable costs except for seed, fertilizer and labor in wheat seed growing were redundant and thus reduced the technical efficiency. Study results also revealed that variables such as education status, record keeping, family size and the land allocated to wheat seed production were the important variables influencing wheat seed growing activities. Since seed growing companies decided the amount of all inputs such as seed, fertilizer, etc. used for wheat seed production and sample farms, implemented these decision in to the practice, revising the applications manual of seed growing companies and auditing the farms for their practice may increase the technical efficiency level of sample farms.

Keywords : Wheat seed; TR83 Region; Stochastic Frontier Analysis; Technical efficiency

The Effects of Some Chemical Pollutants on Aquatic Environments

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Abstract

The water source protection is important for future generations because of increasing waste water coming from different pollutions such as industrial activities and agricultural areas. The impact of contaminated waste water release on the overall health of aquatic bodies is also extremely important as untreated. It is usually very rich in nutrients (nitrogen, phosphorus, silicate) and other contaminants (heavy metals, pesticides, polycyclic aromatic hydrocarbon (PAHs), polychlorinated biphenyl (PCB)). Balance of the environmental ecology is destroyed by the releasing of these wastewaters into aquatic environments which causes increasing the nutrients amount, eutrophication and the formation of algal blooms. In the environment, released heavy metals, destroyed important species all over the world, have toxic effects through accumulation on the living organisms by bioaccumulation and biomagnification. Microalgae and macroalgae, being the functioning of ecological balance, are increased and bigger more and more by feeding with heavy metals and nutrients. Additionally, anthropogenic contaminants in marine ecosystems are often eventually trapped by sediments. It is known that resuspension of contaminated sediments (RCS) have been shown to be in source of dissolved chemicals in historically contaminated estuaries. Marine organisms (such as fish, bivalves, algae and polychaetes) and water quality are sensitive to RCS by many pathways. As a result, a comprehensive knowledge of the development of cost-effective technologies and treatment of contaminated wastewater is emerging as one of the most important issues in wastewater management.

Keywords: Heavy metals, PAHs, Pesticides, Eutrophication, Aquatic Environment

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The Utility of iPBS Retrotransposons Markers to Study Intraspecific Diversity within *Fusarium oxysporum* f. sp. *cumini*

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Abstract

iPBS analysis is a novel tool that developed to analyze genetic polymorphisms in retrotransposons loci without prior sequence knowledge. This method has been successfully applied for studying the population structure and genetic diversity of various organisms. In the present study, we reported the utility of iPBS retrotransposons markers for analyzing genetic variability within *Fusarium oxysporum* f. sp. *cumini*, the causal agent of cumin wilt disease. The results of iPBS analysis were compared with those of the previous techniques used to clarify the population structure of *Fusarium* wilt isolates in cumin. Of 82 iPBS primers tested, nine primers producing the clear scorable bands were used to assess the extent of genetic variation among *F. oxysporum* f. sp. *cumini* isolates. A total of 107 reproducible fragments were scored, out of which 98 were polymorphic (91.6%). iPBS markers provided more satisfactory results for studying the genetic diversity of *F. oxysporum* f. sp. *cumini* and confirmed phylogenetic structure based on the other techniques used to analyze the pathogen population. The results indicated that iPBS analysis is a powerful tool for analyzing the intraspecific variability among *F. oxysporum* isolates.

Keywords: Cumin, *Fusarium oxysporum*, intraspecific diversity, retrotransposons

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Antifeedant effects of *Tanacetum heterotomum* extracts from Turkey on

Ephestia kuehniella Z. (Lepidoptera: Pyralidae)

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Abstract

In the present study, antifeedant effects of extracts of an endemic plant, *Tanacetum heterotomum* (BORNH.) GRIERSON, belongs to Asteraceae family were evaluated against 4th instar *Ephestia kuehniella* larvae, the flour moths. Plants were extracted with hexane, chloroform and water using Soxhlet extractor. Larvae were cultivated in petri dishes including 50, 100, 250 and 500 ppm hexane, chloroform and water extracts for 24 hours and the average of the difference between the final and initial weight of the petri dishes was determined as the amount of consumption. The antifeedant indices at different treatments were compared using an analysis of ANOVA followed by Duncan test for multiple-comparison where significant differences were observed. According to the results, the highest antifeedant effect was observed in the petri dishes including 250 and 500 ppm concentrations hexane and chloroform extracts of the *T. heterotomum*. Antifeedant effect of *T. heterotomum* with the increase of the concentration of chloroform and hexane extracts were increased. Therefore, in order to avoid loss of product during storage of agricultural products that consumed as food, plants which can be used for pest control and its concentrations should be determined instead of pesticides.

Keywords: Antifeedant, Endemic, *Ephestia kuehniella*, *Tanacetum heterotomum*

Antifeedant effects of *Tanacetum heterotomum* extracts from Turkey on *Ephestia kuehniella* Z. (Lepidoptera: Pyralidae)

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ABSTRACT

In the present study, antifeedant effects of extracts of an endemic plant, *Tanacetum heterotomum* (BORNH.) GRIERSON, belongs to Asteraceae family were evaluated against 4th instar *Ephestia kuehniella* larvae, the flour moths. Plants were extracted with hexane, chloroform and water using soxhlet extractor. Larvae were cultivated in petri dishes including 50, 100, 250 and 500 ppm hexane, chloroform and water extracts for 24 hours and the average of the difference between the final and initial weight of the petri dishes was determined as the amount of consumption. The antifeedant indices at different treatments were compared using an analysis of ANOVA followed by Duncan test for multiple-comparison where significant differences were observed. According to the results, the highest antifeedant effect was observed in the petri including 250 and 500 ppm concentrations hexane and chloroform extracts of the *T. heterotomum*. Antifeedant effect of *T. heterotomum* with the increase of the concentration of chloroform and hexane extracts were increased. Therefore, in order to avoid loss of product during storage of agricultural products that consumed as food, plants which can be used for pest control and its concentrations should be determined instead of pesticides.

Keywords: Antifeedant, Endemic, *Ephestia kuehniella*, *Tanacetum alyssifolium*, *Tanacetum heterotomum*

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Quantitative Real-Time PCR Assay for Detection of *Alternaria burnsii* in Cumin Seed

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Abstract

Cumin (*Cuminum cyminum* L.) is an important seed spice crop that used for adding condiments and flavours to food, and for medicinal and cosmetic properties. Among fungal diseases of cumin, *Alternaria* blight, caused by a seed-borne pathogen *Alternaria burnsii* is a devastating disease that occurs in major cumin growing areas of the world. The pathogen causes dark brown necrotic lesions on leaves, seeds and stems, and eventually death of the plant or affected parts. Infected seeds are shrivelled, discoloured and have low germination rate. The use of pathogen-free seed is the most effective preventative measure to control *Alternaria* blight of cumin. The currently available methods for detection and identification of *Alternaria* spp. are based on visual examination of morphological features. However, conventional methods are time-consuming, labor intensive and require extensive training. The aim of the present study was to develop real-time PCR assay for specific and rapid detection of *A. burnsii* in cumin seeds based on Alt a1 gene sequences. The primer pairs designed yielded a single PCR product of 226 bp in size from *A. burnsii* genomic DNA. The real-time PCR assay allowed the amplification of 0.1 pg of pure genomic DNA. The detection limit of real-time PCR in naturally infected cumin seeds was found to be 0.1% infestation level. The results indicated that the real-time PCR assay developed is an ideal tool for confirming *A. burnsii* infection in seed samples.

This work was supported by TÜBİTAK Project 116O036 (Turkey)

Keywords: *Alternaria* blight, *Cuminum cyminum*, Pathogen detection, real-time PCR

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Determination of Effects of Different Harvesting Methods on Oil Acid Composition, Oil and Yield under Main and Second Condition for Sesame

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Abstract

Sesame (*Sesamum indicum L.*) is one of the important oilseed, which high quality and high oleic and linoleic fatty acid composition and sesamol content. But, due to its morphological and physiological characteristics, harvesting mechanization method is not available in Turkey. Harvesting method is to be by hands. Harvesting cost are the most important in production cost of sesame plant. It is thought that planting areas can be increased by determining harvesting systems that are semi-mechanized or full mechanized. In this study, were investigated to determine for sesame plant the effect of different harvest methods on yield, oil and fatty acids. The study was conducted in randomized blocks trial design with four replication for two years main and second crops conditions in Çukurova Region. At the end of the study, it was determined that can use reaper-binder machine at harvest before for four days the full ripening period of sesame. At the period when the least loss of yield, don't significantly affect oil and fatty acid composition as statistically. Furthermore, it was determined that there was no difference in terms of quality compared to be harvesting by hand in this period. In this period, seed yield losses which compared between harvesting by hand and semi-harvesting machine methods, on main crop and on second crop 15.9%, 8.2% respectively. However, it is thought that these seed yield losses are not at a level that would prevent used to semi-harvesting machine method.

Keywords: Sesame, machinery harvesting, quality, fatty acid

Occurrence, Virulence Characteristics and Antimicrobial Resistance of *Yersinia* spp. from Meat and Milk Products

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Abstract

Yersinia spp. is a member of *Enterobacteriaceae* family. Of 11 *Yersinia* species, three species, *Yersinia enterocolitica*, *Yersinia pseudotuberculosis*, *Yersinia pestis*, are regarded as a pathogen for humans. *Y. enterocolitica* and *Y. pseudotuberculosis* are well-known enteropathogens and transmitted through contaminated food or water. *Y. enterocolitica* causes intestinal and extraintestinal infections including enterocolitis, mesenteric lymphadenitis and septicemia. The aim of this study to determine the presence of *Yersinia* spp. in meat and milk products, to compare the isolation methods including ISO10273 and cold enrichment, to investigate the biotype profiles and virulence characteristics of *Y. enterocolitica* as well as antimicrobial resistance profiles of all *Yersinia* spp. Eight different isolation and enrichment methods were used to find the most effective protocol for recovery of *Yersinia* spp. from food. The relationship between the different isolation methods of *Yersinia* spp. from food groups was analyzed statistically using a binary correlation by Pearson product moment correlation. *Y. enterocolitica* strains were examined for virulence properties such as autoagglutination, Congo-red absorption, and crystal violet (CV) binding. Antimicrobial resistance of *Yersinia* strains was carried out using the disk diffusion method on Mueller Hinton Agar. Of 84 *Yersinia* strains, 18 were identified as *Y. enterocolitica* and 66 were identified as the other *Yersinia* spp. There was no a statistically significant difference among the 8 methods for the identification of *Yersinia* spp. All *Y. enterocolitica* strains were found to be negative for virulence tests and belonged to 1A biotype. All *Yersinia* spp. had resistance to clindamycin. A multi-drug resistance was observed in 71 (84.5%) of the strains to at least 3 or more antimicrobial agents. In conclusion, the results of the study contribute to the information on the incidence, virulence characteristics, and antimicrobial resistance of *Yersinia* spp. especially *Y. enterocolitica* as a food-borne pathogen in meat and milk products.

Keywords: *Yersinia* spp., Isolation, Virulence characteristics, Antimicrobial resistance



Isolation, Identification and Biofilm Formation of *Cronobacter* spp. from Various Food Products

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Abstract

Cronobacter spp. belonging to family of *Enterobacteriaceae* is Gram-negative, non-spore forming and facultative anaerobe. *Cronobacter* spp. is emerging opportunistic pathogen. It has been associated with severe infections such as bacteremia, necrotizing enterocolitis and meningitis in neonates and infants as well as immunocompromised adults. The mortality rates of these infections are high. *Cronobacter* spp. as an important foodborne pathogen is widely distributed in nature and can be commonly found in foods of animal and plant origin. Most of the foodborne pathogens are able to attach to surfaces and form microbial communities defined as biofilms. Biofilm formation causes problems in many fields such as food-processing environment, medical devices and industrial water systems. Biofilms are considered as a major source of food contamination resulting in food spoilage, shelf life reduction and pathogen transmission to host. In this research, *Cronobacter* spp. was isolated from various foods according to the methods of FDA and ISO/TS 22964 with some modification. The isolates were identified as *Cronobacter* spp. using biochemical tests. Then, all phenotypically identified isolates were also confirmed by targeting the 16S rRNA gene and alpha-glucosidase (*gluA*) gene. The 35 isolates were identified as *Cronobacter* spp. by both phenotypic and genotypic methods. These *Cronobacter* spp. isolates from various foods including desserts, cheeses, doners, kavurmas, pastramis, meat free cig koftes, spices, and cereals were examined for presence of biofilm formation. The production of biofilm by *Cronobacter* spp. isolates was detected using a microtiter plate assay. The results of biofilm formation showed that one *Cronobacter* spp. from dessert sample was weak biofilm producer and the other isolates did not produce biofilm. The current study is valuable to has indicated the presence of *Cronobacter* spp. in the tested foods. Contamination of foods with *Cronobacter* spp. may be a potential health risk to consumers.

Keywords: Isolation, *Cronobacter* spp., 16S rRNA, *gluA*, Food, Biofilm production

Influence of Beetroot Flour on Some Quality Characteristics of Nitrite Reduced Turkish Fermented Sausage

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Abstract

Nitrite in meat products is responsible for the development of cured color and flavor, acts as a antioxidant and strong antimicrobial especially to control *Clostridium botulinum*. Nitrite can react with amines under certain circumstances to form nitrosamines that have shown to be carcinogenic. Searches about performing nitrite functions in meat products with natural additives have increased progressively in recent years. Nitrate must be first reduced to nitrite to enter into curing reactions. The objective of this study was to evaluate the effects of varying concentrations of nitrate-rich beetroot flour on the pH, moisture content, color and some sensory attributes of traditional Turkish fermented sausages. Beetroot flour content was specified in the formulations of sausages according to the nitrate content of beetroots. Four sample groups containing various percentages of Na-nitrite and beetroot flour were prepared as C:150 mg / kg nitrite; BS1: 0.35 % beetroot flour ; BS2: 0.24% beetroot flour+50 mg/kg nitrite; BS3: 0.12% beetroot flour+ 100 mg / kg nitrite. No differences were found among the treatments in terms of moisture content and pH value. Addition of increased amount of beetroot to the formulations contributed to a decrement in L^* and b^* values measured in the inside and outside of the samples ($P<0.05$). The higher a^* values were observed in the inside of BS1 and BS2 samples than C and BS3 samples. Sensory panel scores revealed all treatments were comparable ($P>0.05$) to the C for attributes in terms of inside and outside appearance, color and texture. Overall acceptance scores of BS1 and BS2 were evaluated higher than control samples ($P<0.05$). The results of this study indicate that replacing nitrite with beetroot flour in the formulation of Turkish sausage could give an opportunity to obtain an innovative meat product with acceptable color, pH and sensory characteristics.

Keywords: Turkish sausage, beetroot, nitrite, quality

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Invasive Weeds in Agriculture and Their Current Situation in Turkey

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Abstract

Invasive plants are a distinct group of plants which easily moved to another area in different ways and disrupt the ecological balance of the introduced region. About 8,000 species or 3% of all known plants are considered to be invasive plants in agriculture (invasive weeds). Of these, about 200-250 species are recognized as a serious threat in world agriculture. They create a great number of seed and the seeds are spread effectively in different ways. The plants forms intensive vegetation (biomass) and also have strong root system and allelopathic effects. Because of these characteristics, invasive plants aggressively grow and spread. Thus they dominate the habitat. Invasive weeds have many important negative impact on agricultural systems. This plants have superior competition ability and allelopathic features. Invasive plants are the serious problem both in the world and Turkey. Some of invasive weeds exist in Turkey and are potentially a threat to Turkish agriculture.

Keywords: Agriculture, invasive weeds, plants, Turkey.

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Possibility of Biological Control of Grey Mould (*Botrytis cinerea* Pers.) on Grape

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Abstract

In this study, the effect of *Bacillus subtilis* (Sim Bacil) was investigated against gray mould disease caused by *Botrytis cinerea* on grape under natural infection conditions. Two grape cultivars, Emir and Barış, which are known to be susceptible grape cultivars to the pathogen, were used. The experiments were carried out in the Viticulture Research Station of Tekirdağ as randomized blocks design. A commercial biological preparate (Serenade) with active ingredient *Bacillus subtilis* and a fungicide with active ingredient cyprodinil+fludioxanil were used for comparison. All preparations were applied at four different periods of growing. At the end of the study, the effect of applications on Emir and Baris cultivars Serenade, Cyprodinil + Fludioxanil, *Bacillus subtilis* (Sim Bacil) were 30.63%, 38.50%, 75.87%; 0%, 15.94%, and 53.96% respectively.

Keywords: Vine, *Botrytis cinerea*, *Bacillus subtilis*, biological control



The Problems of Organic Poultry Production

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Abstract

Nowadays, animal welfare and healthy product consumption are very important and organic poultry production is preferred for this reason. Organic poultry production is focused on animal health and welfare, good environmental practices and product quality. Animals are raised without cages in housing that allows outdoor access with green area, are fed organic feed without GMO and managed with good practices and natural treatments. Organic poultry production has significant advantages that the protection of human health and ecological balance with animal welfare compare with the other production systems, but it also has some disadvantages, such as biosecurity issue, the difficulties in the prevention, detection and treatment of the diseases, feather picking and cannibalism problems depending on the production systems, increase the infectious diseases and predator animal attacks result from free movement in the open area and parasite control problems due to the low hygiene, unsuitable flock density and breed selection, health problems of knee, feet and breasts. It will be possible to solve these problems which concerned about health and welfare with the choice of suitable strain, well care, providing of good nutrition and housing conditions, to increase the biosecurity precaution and to employ the educated workers. In this study, it was aimed to explain the problems of organic poultry production and the directions were shown as a guide to beginners.

Keywords: organic poultry, poultry problems, health, hygiene, biosecurity

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15-17 May 2017

Antioxidant Effect of Medicinal Plants in Meat and Meat Products

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Abstract

Oxidative deterioration in meat causes discoloration, development of off flavor, formation of toxic compounds, poor shelf life and nutrient losses. Products from lipid oxidation such as malondialdehyde can induce mutagenesis and carcinogenesis. While antioxidants can be of synthetic or natural origin, synthetic antioxidants such as butylated hydroxyanisole have been widely used in meat and poultry products. But the demand for natural antioxidants, especially of plant origin has increased in the recent years due to the potential toxicological effects of synthetic antioxidants. The application of medicinal plants including rich-antioxidants in meat can provide functional or nutraceutical meat or meat products and promote consumers health and wellness compared to the use of vitamins and synthetic antioxidants. Studies have demonstrated that oregano, rosemary, clove, sage, thyme and vanillin showed high antioxidant activities in meat and meat products. Antioxidant compounds in these spices were well documented, such as oregano includes caffeic acid, p-coumaric acid, rosmarinic acid, caffeoyl derivatives, cavacrol, flavonoids; sage includes rosmanol, epirosmanol, phenolic acids, phenolic diterpenes, flavonoids. The antioxidant properties of medicinal plants depend on the plant, its variety, environmental conditions, climatic and seasonal variations, geographical regions of growth and many other factors such as postharvest treatment and processing. In addition, composition and concentration of present antioxidants are related to their antioxidant effect. So their dosage application in diets and meat products varies from plant to plant. Antioxidant compounds are usually added at a moderate dosage level, since high level of inclusion may mechanistically cause adverse effects through pro-oxidative action in meat. Also sensory characteristic of meat products is the other limiting factor on the dosage levels of used plant derivatives. Further research will be needed to evaluate the efficient use of medicinal-plant-rich antioxidants to preserve the functionality of meat and ensure production of meat products with nutraceutical properties.

Keywords: Medicinal Plant, Meat Product, Antioxidant



Nutritional Habits of University Students and Affecting Factors: Artvin Example

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Abstract

The eating habits of university students are closely related to many illnesses that may be seen in later ages. Many researches have shown that eating habits of different forms have negative effects on human health. This research was conducted to determine the eating habits of of Emergency and First Aid students and the internal and external factors which most affected these habits. For this purpose, a questionnaire form prepared for the students who are studying in the first and second grade taught and secondary education in the first and emergency aid department was collected and data were collected. 120 students participated in this survey. As a result of this study, the body mass indexes of the students were found as $21.8 \pm 2.4 \text{ kg.m}^{-2}$. According to this study, it was found that 80% of the students did not get enough and balanced nutrition, and 90% of them skipped main meals, again. In this study, it was common for students to skip breakfast, which is the most important meal of the day. Approximately 74% of the students were found to have eating habits for computer or TV. According to the findings, it was found necessary to provide healthy nutrition training for all students throughout Artvin Çoruh University at regular intervals for all students. It is also necessary to provide healthy eating menus at low prices to ensure adequate and balanced nutrition. The importance of meals should be emphasized and necessary arrangements should be made in this regard.

Keywords: Eating habits, human health, nutrition, eating menu.



Vertical Farming: A Solution for Food Crises in Istanbul

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Abstract

Agricultural activities have served as an important source of economic livelihood as well as meeting people's basic food needs. In Turkey, recent legislation and regulations, the emergence of large-scale agricultural production enterprises, and the cost of the necessary equipment nearly eliminated small scale farming. Changes in global food policies and sectoral competitions cause farmers in rural areas to leave their lands and migrate to large cities, hoping to find better employment, education facilities and health services. In the 21st century cities, it is necessary to reconsider the city and agriculture, while urbanization is inevitable and increasing. The "food crisis", which today seems like an economic indicator, will be seen in the future in terms of accessibility though, especially when the urban population is rapidly growing. Many cities are unable to afford their own food for reasons such as the inadequacy of existing urban agricultural activities and the opening of agricultural land to construction. Lack of empty spaces on the horizontal plane for agriculture parallel to the disappearance of green and open spaces has led to new necessities of the consideration for different urban agriculture typologies in urban area, and landscape architecture can stand as a solution. This paper aims to discuss the potential of vertical farming to mitigate urban food crisis and to contribute the integration of unused spaces with urban green network. Regulations in historical process are examined, with the mapping of unused vertical spaces to understand the potential areas. Vertical farming is proposed for center of Besiktas with the re-use of empty public facades. As a conclusion, different building typologies can participate in existing ecological and green networks with vertical agriculture solutions, and can help providing the local food to neighborhoods, with less energy consumption but more environmental, social, and economic gain.

Keywords: Urban agriculture, vertical farming, food crisis, Istanbul, landscape architecture.

Evaluation of Gastronomic Culture in Terms of Rural Tourism: Model of Yayladere/Bingöl

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Abstract

The purpose of this study is to analyse the gastronomic culture of the Yayladere, a town in Bingöl, in terms of countryside/rural tourism. For this aim, related conversations were conducted in Yayladere with local experts, residents and authorities of public institutions. In these dialogues, the questions, efficiently prepared to understand the local food and table culture, equipment used in the kitchen, and specific meals or drinks in the region, were asked participants. According to results of the conversation, it was revealed that this region is quite similar with Bingöl's determined culture for food and drink structure. However, some differences were found in style of cooking and type of used equipment in the kitchen between Yayladere and Bingöl. Being close to Tunceli and Elazığ, this region has these differences. Moreover, found differences might have effect on residents' life styles such as presentation of food and drink and table manners in the region when compared to Bingöl city center. It is possible to say that there is a useful parameter which is kitchen/food culture of the region on rural development. Therefore, this plateau style culture should be supported by constructing farms and appropriate houses in the region to use developmental plans. Furthermore, The Sülbüs Festival which is conducted annually as a local celebration is a significant opportunity in order to present local food and drink culture of Yayladere.

Keywords: Gastronomy, rural tourism, Yayladere

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Adana Farmers Approach Towards Implementation of The Provincial Crop Insurance, Problems and Suggestions

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Abstract

Adana holds an important place in agriculture growers farming products must be aware of the situation in the agricultural insurance trends for agricultural insurance, pension insurance and make and adoption , problems and solutions have been determined. In the study, a total of 36 880 agricultural enterprises and to those who are determined that the last 5 years insurance. Insurance 18 050 who are taking 18,830 businesses. Sampling, "Simple random sampling method" is used; In 2012, the manufacturer of herbal products, insurance (60 people), taking the (61 people) A total of 121 surveys were made to be. In the study, "Producer of the expectations from the state" to the question; The answer they gave; The most important expectations in order of importance; 21.7% of the insured, taking 16.4% of unable to make "are extended insurance coverage while" they said. "What are your expectations from the insurance company on agricultural insurance practices?" To the question; When expectations are ranked according to the most important expectations were answered; 60% of the insured, "they give training in agricultural insurance" and taking 37.7% of unable to make "must overcome the lack of information" they said. Producers, "natural disaster risks faced by the producer" to the question; given answers; When natural disasters listed in order of importance; unable to make 42.6% with 56.7% of those taking out insurance "full" they said. "Suffered by producer risks" to the question; The biggest risk is the risk are ranked according to the response given; 85% and 36% of the insured to make unable to make "natural disasters", they said.

Keywords: Crop Production, Agricultural Insurance, Farmers Trends, Adana



Symptoms Caused by *Mirafiori Lettuce big vein virus* on Lettuce Varieties in Ankara Province

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Abstract

Lettuce grown in many countries is botanically characterized in terms of morphological and genetic diversity and is divided into 7 main groups in terms of morphotypic characters. These are *Lactuca sativa* var. *capitata* (head lettuce), *L. sativa* var. *crispa*-(crisp leaf lettuce), *L. sativa* var. *longifolia* (lettuce), *L. sativa* var. *angustana* (stalk type lettuce). The cultivation of lettuce, is in increasing trend in Ankara province and head (iceberg)lettuce, crisp leaf lettuce and longifolia lettuce are the varieties grown intensively in the region. In this present research, viruses causing infections on lettuce were investigated. MiLBVV has been determined as the most common virus infection with a rate of 2,71%. Collected samples were subjected DAS-ELISA test and RT-PCR assay, and 39 of them were detected as infected with *Mirafiori lettuce big vein virus* (MiLBVV). 9 crisp leaf and 30 head lettuce were detected as infected with MiLBVV. However, in MiLBVV infected samples, symptom differentiation were observed on botanical varieties of lettuce. Morphotypically, unbinding of heads, excessive growth of leaf veins, blisters of leaves, embrittlement, bitterness in the heads of iceberg lettuces, growing retardation and chlorosis around leaf veins on crisp leaf lettuces were observed. In the case of *L.sativa* var. *longifolia*-lettuce varieties, neither positive reaction of MiLBVV was detected in the serological, molecular tests, nor symptoms of the pathogen were developed. There was no infection on red lettuces.

Keywords: MiLBVV, DAS-ELISA, RT-PCR, Lettuce varieties

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Molecular Characterization and Genetic Diversity of Coat Protein Genes of *Lettuce mosaic virus* Isolates in Ankara

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Abstract

Lettuce (*Lactuca sativa*) is an important vegetable crop with increasing economical value in Ankara province. Many viruses cause diseases and economical losses in lettuce. *Lettuce mosaic virus* (LMV, *Potyvirus*), is the one of the most common viruses of lettuce plantations of Ankara Province. It has three strains including LMV-Row, LMV-Greek, LMV-Yar in the World. They were all subjected to double antibody sandwich-enzyme linked immunosorbent assay (DAS-ELISA). Samples are collected from lettuce fields and LMV was detected from 25 of 324 lettuce samples collected from 45 divergent fields from three districts of Ankara province. The presence of LMV of ELISA positive samples was confirmed by reverse transcription- polymerase chain reaction (RT-PCR) assay. Coat protein gene specific primer pairs were used for the detection of LMV in RT-PCR and amplified products were 800 bp long. Amplified cDNA fragments of Beypazari, Cubuk, Ayas isolates were sequenced for molecular characterization and detection of genetic diversity of LMV. Sequence comparisons showed 89-98 % to 77-99 % sequence identity at nucleotide and amino acid level, respectively, of the CP genes of LMV isolates from Ankara province and other parts of the world. Multiple alignment of LMV nucleotide sequences determined by LMV sequences available NCBI data bank were performed using ClusterW multiple sequences Alignment Programme. Phylogenetic tree were constructed by using the neighbor-joining method of MEGA 7. The statistical expressiveness of the clusters and branches of the phylogenetic trees was tested by bootstrap analysis with 1000 replications.

Keywords: LMV, Lettuce, Coat protein, Genetic diversity .

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Rheological Characterization of Some Honey Types from Turkey

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Abstract

Rheological characterization of some honeys samples was determined. 7 honey samples from different origin (erica flower, chestnut flower, astragalus-thyme flower, citrus flower, lavender flower and 2 different pine honey samples) were supplied from a honey processing plant. The samples were stored in glass jars in a dark place until being analyzed. Dry matter content of the samples was determined by a refractometer as water soluble dry matter in Brix. The difference of the determined Brix values from 100 was used as water content of the samples. Rheological properties were determined by using a Brookfield RVDV-II model viscometer, SC4-14 small sample probe, SC4-6R sample holder, SC4-64Y small sample adapter and SC4-45Y heat jacketed. Sample temperature was attained by using circulated water bath (Polyscience) and measurements were done at 20°C. At least 8 different rotational speeds, which were determined according to the maximum and minimum ranges of the instrument and depending on the sample properties, were used for the rheological characterization. The measurements were done according to increasing order measurement. All of the honey samples were showed Newtonian behavior where the R² values were found between 0.9997-1.000. Generally, the viscosities of the samples were increased with the increase in dry matter content of the honeys and the viscosity values were changed between 9.80 – 21.92 Pa.s. Additionally, the relation between the dry matter content (C) and the viscosity (μ) of the honeys were represented by an exponential function of “ $\mu=3^{-15}e^{0.4494C}$ ” with an R²=0.9601.

Keywords: Honey, Viscosity, Rheological characterization.

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The Effect of pesticides on the way of EROD and GST biotransformation activity in fish

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Abstract

Pollutants such as pesticides are present in aquatic environments in the form of complex mixtures which occurs healthy effect of aquatic organisms. This effects in aquatic organisms such as fish directly effects metabolic pathway of the stomach. EROD (7-ethoxyresorufin-O-deethylase) activity has been used as an indicator of pesticides. GST (Glutathione S transferase) is also widely used of indicator to oxidative stress. The aim of this review, the effects the pesticides on the importance of using EROD and GST activity in fish.

Keywords: EROD, GST, Fish, pesticides

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The Changes that Occur in Fish During Frozen Storage

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Abstract

In recent years, consumption of processed and frozen fish has increased as a result of an increasing consumer demand for convenience high-quality food products. Freezing is the main method of processing fish for human consumption and the most used to control and/or reduce biochemical changes that occur during storage. Although freezing is an effective method of preserving foods, some deterioration of organoleptic properties of seafood and food quality occurs during frozen storage. The quality of frozen fish products during storage can be influenced by several factors such as initial fish composition, fish species, the biological status of fish at catch, handling on-board, temperature and storage time before freezing, freezing rate, frozen storage temperature, temperature fluctuations, thawing procedure, type of packaging material and protection from light and oxygen rate. The objective of this study the changes that occur in the flesh of fish during the freezing process.

Keywords: Frozen storage, protein and textural changes, lipid oxidation, fish quality

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Omega Fatty Acid Value of Seafood and Its Place in Human Health

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Abstract

Today, health problems due to fast food-style irregular diet have reached the dimensions that can not be underestimated in some western countries and Turkey. Especially in developed countries, people are very careful about their diets and care to choose appropriate foods for their health. Among these foods, fish and other aquatic products that are rich in unsaturated fatty acids are the first order. Unsaturated fatty acids are found in nature this types; omega-3, omega-6 and omega-9. Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are linolenic series omega-3 fatty acids. These are two important fatty acids found in all seafood and not found in other foods. It is known that these two fatty acids cause significant biochemical and physiological changes in the body. Omega-3 fatty acids are proposed because of their beneficial effects in the prevention and treatment of many diseases affecting human health. In this study, the importance of fish oil which is a valuable food due to its high omega fatty acid content and the importance of human health will be examined.

Keywords: Fish, fatty acid, omega, health.

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Determination of The Microbiological Properties of A Traditional Anatolian Cheese, Aho Cheese with Mineral and Heavy Metal Contents

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Abstract

The research has been conducted researching out to determine mineral substance and heavy metal contents with microbiological properties in 16 Aho cheeses collected from the district markets of Sürmene and Araklı districts of Trabzon. More cows' milk is used in making Aho cheese. Meals prepared from breakfast or corn are consumed by adding soup and pasta. Aho cheese; Minzi, Golot cheese, salt and red pepper flakes are made of 4 components. Cheese reaches to the degree of ingestion after 2 months. But it can be consumed after 1 year. The longer the maturation period, the more the flavour develops there. In the present study, produced in small dairy farms and family type business places subsequently allocated into consumption in Trabzon province in Aho cheese determination of some mineral ingredients and heavy metal levels and as per identified limits in Turkish Food Codex its compatibility have been intended. Mineral ingredient and heavy component contents of Aho cheese products have been identified based on ICP-MS implementation and in mg/kg unit type.

In this study, the microbiological results obtained were as follows; yeast and moulds 4.12 ± 0.09 log cfu/g, total aerobic bacteria 6.72 ± 0.11 log cfu/g, Lactobacilli bacteria counts listed in the MRS, 6.42 ± 0.05 log kob/g were found. Coliforms and *Staphylococcus aureus* were below $<10^1$ log cfu/g in all samples. The average levels of the mineral substances and heavy metals in the Aho cheeses were determined as; calcium 3628.30 ± 355.07 mg/kg, potassium 461.20 ± 33.48 mg/kg, sodium 8463.75 ± 658.97 mg/kg, magnesium 163.42 ± 10.96 mg/kg, iron 5.46 ± 7.27 mg/kg, zinc 27.04 ± 2.62 mg/kg, copper 1.358 ± 0.13 mg/kg, manganese 0.31 ± 0.17 mg/kg, phosphorus 4187.05 ± 327.60 mg/kg, lead 0.174 ± 0.04 mg/kg and cadmium 0.028 ± 0.04 mg/kg. In cheese samples heavy metal levels found to remain in the constraints stated out by Food Codex for some of the food materials.

Keywords: Aho cheese, mineral substance, heavy metal, ICP-OES

Lipase, Protease And Lecithinase Production of *Pseudomonas* Spp. In Raw Milk And White Cheese

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Abstract

In this survey, 87 samples of raw milk and white cheese from dairy plants in Ankara were analysed to find out if they were contaminated with *Pseudomonas* spp. Twenty-three *Pseudomonas* isolates were isolated from cetrimide agar, and confirmed by microscobic and biochemical characterizations. The isolates were identified as *P. cepacia*, (39.1%), *P. aeruginosa*, (30.4%), *P. pseudomallei* (17.4%), *P. putida* (4.3%), *P. fluorescens* (4.3%) and *P. aureofaciens* (4.3%). Nutrient agar containing 1% tributyrin, nutrient agar supplemented with 2% casein and egg yolk agar, respectively were used to study lipase, protease and lechitinase activity. A high proportion of *Pseudomonas* isolates had lipase production (95.7%), protease production (100%) and lechitinase production (100%). The results of this study clearly show that the *Pseudomonas* spp. have spoilage features. All of the stages in the milk processing chain during manufacturing have to be under control to achieve the quality and safety of milk and dairy products.

Keywords: *Pseudomonas* spp. white cheese, raw milk, lipase, protease, lechitinase

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Prevalence and Antibiotic Resistance of Extended-Spectrum Beta-Lactamase (ESBL) Producing *Escherichia Coli* And *Klebsiella* Species Isolated From Meat and Milk Products In Turkey

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Abstract

In this study, a total of 75 samples of raw meat (chicken drumsticks and minced meat), raw milk, white cheese and ice cream were analysed for the presence of *Escherichia coli* and *Klebsiella* spp. Fifty *K. oxytoca*, 45 *E. coli* and 13 *K. pneumoniae* isolates were isolated and identified. Resistance of the isolates to selected 13 antibiotics was determined by the Kirby-Bauer disk diffusion test. Resistance to ampicillin, tetracycline, cefotaxime, ceftazidime and ceftriaxone was frequent for all isolates. All isolates were susceptible to ertapenem, imipenem, piperacillin/tazobactam and cefepime. It was found that by the phenotypic confirmatory test 42.9 % and by the double disk synergy 35.2% of the food isolates namely *E. coli* and *Klebsiella* produced extended-spectrum beta-lactamases (ESBL). All ESBL-producing *E. coli* and *Klebsiella* spp. showed high-level resistance to cephalosporins and monobactams (aztroenam). Our findings indicate that meat, milk and their products represent potential hazardous sources of multidrug-resistant *E. coli* and *Klebsiella* species.

Keywords: antibiotic resistance, β -Lactamases, *Escherichia coli*, foods, *Klebsiella* spp.



Quality Contents in Organically Grown Broccoli

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Abstract

Quality contents of vegetables have an important positive effect on human health. An experiment was conducted that compared effect of different chemical and organic fertilizers on the quality contents of lujk broccoli under organic management. In this study, biofarm, proteit, dried farmyard manure, wet farmyard manure were used as organic fertilizer materials. Ammonium nitrate and triplesuperphosphate were used as chemical fertilizers. All treatments were adjucted to receive 150 kg ha⁻¹ N. Broccoli lujk was used as test plant. The experiment was established as a randomized block design with three replications and was conducted under the open field conditions. Our results indicate that the of chemical fertilizer application brought about the highest values for tirable acidity in the 2011 year (0.707%). Brix values was found to be statistically significant in 2010 year. pH content of broccoli ranged from 7.12 to 7.31 in 2010 year and from 6.51 to 6.56 in 2011 year.

Keywords: Organic fertilizer, Broccoli, Soil, Quality

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Investigation of Antioxidant Effects of Glycyrrhizin in Liver Tissue of Experimental Diabetic Rats

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Abstract

Diabetes is a metabolic disease having a significant prevalence in the world. Traditional herbal medicines have long been used in approaches to the treatment of diseases and the effectiveness of bioactive components of these plants has been demonstrated by clinical trials. Glycyrrhizic acid (GA) is the primary bioactive component of the licorice root and it was reported to have anti-inflammatory, anti-diabetic, anti-oxidant, anti-tumor, anti-microbial and anti-viral effects. Experimental diabetes model was established by six weeks of streptozotocin administration in rats. In the study, the experimental animals consisted of four groups (each containing 8 rats): control group, glycyrrhizin group, diabetic group and diabetic+glycyrrhizin group. At the end of one week trial, liver tissue samples taken from animals were homogenized and total antioxidant capacities were measured spectrophotometrically. Our results indicated that total antioxidant capacity increased by 23% in glycyrrhizin applied group and decreased by 7% in diabetic group according to control. In addition, glycyrrhizin elevated total antioxidant capacity by 50% in diabetic+glycyrrhizin group according to diabetic group. These findings demonstrated that glycyrrhizin treatment enhanced the antioxidant status in liver of diabetic rats.

Keywords: Diabetes mellitus, glycyrrhizin, antioxidant

Effectiveness of Therapeutic Ozone in *Yersinia Ruckeri* Infection

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Abstract

Yersiniosis is a systemic disease caused by *Yersinia ruckeri*, which is particularly affecting Enteric red mouth (ERM) disease in trout. In the study, it was aimed to maintain the life of the cells and killing the bacteria by providing anti-apoptotic and anti-necrotic effect via application of therapeutic concentration of ozone to the macrophages infected with *Y. ruckeri*. Macrophages of the rainbow trout-originated were exposed to the appropriate number of *Yersinia ruckeri* for 24 hours after being incubated with ozonized medium (30 min) at the nontoxic concentration. Effective concentrations were demonstrated by viability tests (3 Gamma, 1.5×10^8 , respectively). After incubation times, the protein levels of caspases 1,3,8 and 12 were investigated by ELISA method from the obtained lysates. Bacterial infection caused 47% loss in the cells, while nontoxic ozone protected the cells by 27%. In addition, it was also found that bacterial stimulation of caspases 1, 3, 8 and 12 were suppressed by ozone pre-administration and mostly at the level of protein translation. As a result, *Yersinia ruckeri* infection caused cell loss in the macrophages of rainbow trout by stimulating apoptosis. However, nontoxic ozone significantly improved this negative situation.

Keywords: Yersiniosis, ozone oxidative preconditioning, anti-apoptotic



Environmental Effects of Pesticides: Organochlorines

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Abstract

Pesticides are the substances or compounds that are used by human beings for exterminating undesired organisms or reducing the harms caused by them. The unconscious and unchecked use of pesticides can cause harmful organisms to build up a resistance to such substances and the residues left on crops and agricultural produce create a significant disadvantage for both human health and environment as well as international trade. However, such a disadvantage can be turned into an advantage once the crops are preserved economically and the product quality is improved through the studies to be conducted in this field, and by making sure that the residue of pesticides is not threatening the human health and environment when used a safe and more conscious. Pesticides are classified in accordance with their type of formula, the pest groups against which they are effective, their purpose of use, the biological stage of the intended pests, the ways through which pests are dealt with, toxic properties, location in which the pests are contained, the condition of the host and the physical state of the pesticide. Depending on their intended use, they are grouped as insecticides, herbicides, fungicides etc., the active substances they contain, however, they are defined as aniline derivatives, carbamates, chlorophenoxy, organochlorine (DDT, aldrin, dieldrin), organophosphorus compounds, pyridine and pyrimidine derivatives, triazines, urea containing compounds and unclassified compounds, and it is reported that they manifest the genotoxic effects of many other chemical compounds. Being ecotoxicologically the most important among the aforementioned pesticides and due to their long lasting effects, the organochlorines (OC) are hazardous persistent organic pollutants that have a long half-life in soil and water and a high potential for bioaccumulation and a high degree of resilience against microbial attacks and are accumulated in human and animal fat tissues, and as such they pose a significant risk for the environment. Although it has been many years since the DDTs were banned, there are nevertheless reports suggesting that pesticide residues are found in glaciers.

Keywords: Pesticide, organochlorine, DDT, environmental effect



General Evaluation of Table Olive Economy and Technology in Turkey

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Abstract

According to the average of 2015/16 - 2016/17 production seasons, 2675 thousand tons of table olives were produced in the World. Approximately 30% of world table olive production takes place in European Union countries. While Spain ranks first with 20% share of total table olive production, Egypt ranks second with 17% share, and Turkey ranks third with 16% share. Because increasing consumer demand to incorporate healthy foods into diets, there is an interest in table olives. This study includes a general evaluation of Turkey's table olive sector. Turkey table olive sector is covered by the light of statistical data with the subheadings of production, consumption and foreign trade status. The basic material of the study consists of national and international data compiled from secondary sources (TURKSTAT, IOC, FAO, SPO etc.). In addition, it is utilized from research reports and articles related to the subject. In the evaluation of statistical data, percentage rate and arithmetic mean are used. As a conclusion, 25% of the grain olive production in Turkey is processed as table olives. This rate is even higher in the years when olive oil prices are low. Table olives are the main fermented foods in Mediterranean countries and constitute an important part of the Mediterranean diet. This diet mainly consists of olive fruit consumption and its products and possesses inarguably beneficial effect on the human health. Small olive processing in the form of family enterprises are transforming increasingly into large-scale industrial enterprises and it seems that advanced technologies have spread. As an average of many years, 83% of the domestic production of table olives are black, 11% are green and 6% is turned-color olives. Within the table olive production of Turkey, the Aegean Region is in the first place. Consequently, table olive enterprises are also locate in this region.

Keywords: Economy, Table olives, Production



Analysis of Tooth Stiffness of Spur Gears by Finite Element Method

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Abstract

Stiffness of gear teeth is very important characteristic because it relates to deflection which is inevitable under transmitted forces. Determining stiffness of gears is necessary in many fields as; gears design, noise and vibrations and optimization processes. In all applications, (force-deflection) of teeth must be in acceptable ranges because it mainly influences the transmission process. Too low or too high stiffness may cause serious transmission errors. Many parameters affect stiffness, most significant ones relate to gear material, design and conditions of the motion and applied forces. In this study calculations of stiffness are presented for many 2-D models of involute spur gears with standard material and simple static cases but differ in some macro geometrical parameters (module, pressure angle and number of teeth). Finite Element Method (FEM) is most powerful tool calculating some parameters in structural engineering problems such as (deflections, displacements, stresses and etc.), here also FEM has very helpful role because of its high capability on simulating complex gear mesh process. So by some similar procedures in FEA, we obtained values of single tooth stiffness, one combined pair teeth stiffness and varying mesh stiffness. Models of study have been generated by homemade software. FE analysis has been performed by MARC simulation software program of MSC Nastran for non-linear analysis. Obtained results showed how stiffness behavior changes with different parameters of gear. FE analysis results are approximately consistent with the values obtained by analytical results.

Keywords: Spur gear, single tooth stiffness, tooth pair stiffness

Olive Harvesting Methods and Their Importance at Production Share on Cost

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Abstract

Olive is a strategic agricultural product due to supplying inputs and generate employment at food sector, its share at export and positive impact on human health. Harvesting is taking relatively big portion of the labour requirement for production. Harvesting period coincides with coldest season that cause difficulties on finding workers and creates stress on farmers. Moreover, harvesting is a most important and highest cost item considering production cost. In this study, harvesting methods and their shares at production cost was analysed. Olive harvesting methods is segregated into two parts; conventional and machine harvesting methods. Harvesting time is determined by the aim of its consuming preference. Harvesting methods affect the remaining olive on trees, olive quality and production cost. Selecting methods for olive harvesting in Turkey are determined by evaluation of olive (table or oil), farmer's routine, and openness to innovation (technology use), investment cost and size of agricultural holdings. At the production of olive, expenses for cultural process (pruning, soil tillage etc.), are segregated depend on the main inputs. Share of harvesting is varying in Turkey between % 30-50 and reflects negatively. It was reported that at table olive production in Aegean and Marmara regions, harvesting cost took %35, 4 from the cost of agricultural activities. The share for olive oil production was % 64, 4. Lately yield per three is aimed to increase beside decreasing cost can be achieved only by using machine at harvest. Yield per tree in Turkey is quite lower than competitors. As a result, harvesting soct is important on produciton. Either decreasing production cost, or harvesting high quality olive shifting to macine use in harvesting should be fostered. For this target, there is need to increase training activities for farmer and to keep continuity of subsidies.

Keywords: Harvest, olive, production cost.

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Agricultural Mechanization and Energy Use Situation of Wheat- Second Crop Maize Agriculture in Cukurova Region

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Abstract:

Mechanization is one of the most important technologies that support productivity in agricultural production and has the highest share in production costs. This situation requires the need for an effective mechanization planning. In this study, the resource requirements (h/ha, h/ha, MJ/ha) and fuel consumption (L/ha) per production unit of agricultural mechanization processes in wheat-second crop maize production were determined in Çukurova conditions. The research was conducted for two years. While total machine labor in wheat was 4.89 (max h/ha) and human labor was 5.20 (h/ha), these values were found to be 8.66 (max.h/ha) and 9.59 (h/ha) for the product maize. In the study, While energy consumption was of 395.416 MJ (109.84 kWh) per hectare, energy output equivalent to 2588.5 MJ (719.03 kWh). The amounts of fuel consumed (L/ha) for the mechanization processes are calculated as 36.00 for wheat and 61.60 for the second crop maize.

Keywords: Cukurova, wheat, second crop maize, agricultural mechanization management



Agricultural-Industries Waste Materials As an Eco-Friendly Adsorbent For Treatment of Metal Plating Effluents: Pumpkin Seed Hull And Potato Peel

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Abstract

The major advantages of adsorption over conventional treatment methods include low cost, high efficiency, minimization of chemical and/or biological sludge, regeneration of biosorbent, no additional nutrient requirement and possibility of metal recovery. Activated carbon is the most promising adsorbent material, presenting high adsorption capacity for many pollutants (dyes, metals etc.). However, the need to turn on more eco-friendly materials leads to the use of low-cost ones derived from agricultural sources. Currently, agricultural waste materials such as rice husks, rice straw, waste tea, olive waste, coffee husks, barley husks, forest industries waste materials such as sawdust, fibers, switchgrass, bamboo culms, and agricultural-industries waste such as oil palm shell etc. were used as natural adsorbent materials for treatment of industrial wastewaters. The main advantage of the materials was the reusability. The aim of this work is to use environmental-friendly materials as adsorbent for the treatment of metal plating wastewaters. Pumpkin seed hull and potato peel which are a low cost, renewable agroindustry by-product were used for the removal of COD from metal plating wastewater. Batch experiments were carried out with original effluents taken from food production facilities in Nevşehir. After activation with KOH, H₃PO₄ and modification with oxidation agents, these materials were used for the treatment at under certain conditions. Parameters like contact time, pH, adsorbent concentration, adsorbent dose were studied. The adsorption data were correlated by the Langmuir and Freundlich isotherms. The results showed that, aforementioned natural materials which is modified might a very good adsorbent for the removal of COD from the plating effluents.

Keywords: Agricultural wastes, plating industry, waste minimization, adsorbent, COD removal



An Approach to Comparing Different Land Evaluation Methods with NDVI

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Abstract

Land evaluation is a necessary process for determining the potential capabilities of the land under different uses and for sustainable soil fertility. Today, many land evaluation models are being developed and used for this purpose. But the availability of models is constantly being investigated by the researchers. In this study, Storie Index (SI) and Productivity Index (PI) models were compared with NDVI values which is a remote sensing analysis in Konya Beşgözler agricultural field on the GIS environment. In the results of the study, SI land evaluation model was determined with higher accuracy coefficient ($r^2 : 0.86$) as far as PI model ($r^2 : 0.29$) to the ability of the soil capability depends on the density of vegetation.

Keywords: GIS, Land evaluation, NDVI, Productivity Index, Storie Index

In Ovo Feeding and Effects

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Abstract

In poultry, the development of the digestive tract as soon as possible for high yields and the application of feed and feed methods to enable this are of great importance. In commercial applications, early-emerging chicks should be kept on the machine for 24-48 hours, the delayed feed consumption lead to changes in enzymatic activity, amino acid and glucose transport activities, as well as reduced crypt depth and enterocyte transport in the tissue and enzymatic development of the digestive tract in post-incubation period. During this time, the body's reserves are used to metabolize and protect the body's temperature. This result reduced body weight and impairing of the immune system, and consequently reduce performance during the period of efficiency. Within a few days after hatching, the organs undergo functional and physically significant development. This is especially important for the digestive tract. The most important role in promoting growth during the early period after hatching is the development of the digestive tract Several new approaches have emerged in the feeding of birds, such as ovo feeding, in order to reduce physiological limitations, to accelerate the early development of chicks and to reflect this effect to the whole life. *feeding method* is a biotechnological approach that takes advantage of advanced technological developments for the application of liquid solutions with carbohydrates, amino acids, various proteins, vitamins, hormones and antibody contents to the intersections of winged embryos during the incubation period. This technique gives more favorable results on the development of the digestive system than the classical feeding methods, as the animal feeding technique begins to consume the nutrient before the animals naturally leave the egg. In this review, the emphasis was placed *in ovo* feeding techniques, their effectiveness, and their poultry feeding.

Keywords: Poultry, *in ovo* feeding, Small intestinal morphology.

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15-17 May 2017

Morphological Study of Trachea and Cartilagines of the Larynx in Red Foxes (*Vulpes Vulpes*)

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Abstract

The precise anatomical information about laryngeal cartilages is essential for the process of diagnosis and treatment of larynx diseases. This study was aimed to investigate the macroanatomical and morphometric features of the trachea and cartilages of the larynx in the red fox (*Vulpes vulpes*). For this purpose a total of 10 adult red fox (6 male, 4 female) were used which were collected at different times from traffic accident. Trachea and cartilages of the larynx were dissected carefully and morphometric measurements were taken. Some morphometric aspects were revealed belonging to sexes. Consequently, the tip of the epiglottis was pointed. The margines laterales of epiglottis were twisted. Both the right and left side of the cartilago arythenoidea had an oval protrusion of the processus muscularis. In cartilago thyroidea, cornu rostrale and cornu caudale were clearly visible. Cartilago cricoidea had a curved structure and was in the form of a ring.

Keywords: Morphology, Larynx, Cartilagines, Trachea, Fox

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Pathological Findings of Paratuberculosis in Dairy Goat

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Abstract

Paratuberculosis is characterized with granulomatous reaction especially in ruminants. The disease can cause important economic losses. The causative agent is *Mycobacterium avium subsp. paratuberculosis* (MAP) that cause reaction especially in intestine and lymph node. In this study, it was aimed to identify the pathologic findings of paratuberculosis disease and the agents detected by Ziehl-Neelsen staining method in smear and tissue sections. In this study, a total of 12 hair goats, which exhibited typical paratuberculosis findings and were obtained from 2 different farms, were used as material. The average age of the goats was 3-7 years old. Necropsy was performed, and samples were fixed in 10% buffered formalin, routinely processed, blocked in paraffin and sectioned at 5 µm. Hematoxylin and eosin (H.E.) staining were performed in the sections. The anamnesis was recorded in the information, stagnation, fatigue and severe diarrhea in diseased animals. It was reported that the deaths were occurred following severe diarrhea. In the macroscopic examination, It was found that the intestines were normal in some cases (3 cases), some cases were mildly thickened (7 cases), and in some cases they were thickened. Mucosal ulcers were found especially in ileum. In addition to, especially in mesenteric lymph nodes, irregular areas with gray-white borders were noticed. The diagnosis of paratuberculosis was made by the Ziehl-Neelsen stain of the smears of both rectum contents and tissue sections (especially ileum and lymph node). This study suggests that dairy goats may be important in the early detection of disease by introducing the agents in the prepared smear from the contents of the rectum.

Keywords: Dairy goats, Paratuberculosis, Pathology,



Evaluation of Peste Des Petites Ruminants in kids: A Pathological study

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Abstract

Peste des petits ruminants (PPR) are a highly contagious viral disease of small ruminants. The disease can cause important economic losses due to high mortality. The aim of this study was to examine gross and microscopic findings in 35 kids (22 female and 13 male) with naturally occurring PPR infection in East Mediterranean region of Turkey. Erosive ulcerative stomatitis, fibrino-necrotic tracheitis and pneumonia were seen in macroscopical examination. Histopathologically, there was syncytial cells in the oral mucosa, pulmonary alveoli, liver, and lymphoid tissues. Prominent characteristic eosinophilic intracytoplasmic and/or intranuclear inclusions were observed in epithelial cells lining in oral mucosa. Similar inclusion bodies were observed in bronchial and bronchus epithelium of lung. In conclusion, macroscopical and histopathological immunohistochemical findings were described in detail. These findings may be contributed to explain of details of peste des petites ruminants.

Keyword: Peste Des Petites Ruminants, Kids, Pathology, Histopathology

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The Effect of Different Organic Fertilizers Applications on the Lettuce Yield Components

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Abstract

Environment awareness is increased using of the organic fertilizers all over the world. In this study was investigated the effect of different organic fertilizers on plant length, plant diameter and yield. In experiment vermicompost and profert as organic fertilizers were used. All organic manure was applied once as basal dressing and being incorporated into the soil. Concord, locarno and endiv as lettuce (*Lactuca sativa*) cultivars were used as test plants and the experiment was established as a randomized block design with three replications and was conducted under the open field conditions. At the end of the experiment, the harvest was harvested when lettuce heads were harvestable size. All organic treatments were adjusted to receive 150 kg ha⁻¹ N. The results indicated that organic fertilizer significantly affected plant length. Our results indicated that the highest yield was observed in profert organic fertilizer application. However endiv cultivar had the highest yield (4759 kg/da). Endiv which had the highest plant length was the cultivar (21 cm). The lowest plant diameters were observed on Concord (21.9cm).

Keywords: lettuce, organic fertilizer, yield component, soil



Effect of Food Processing on Antioxidant Capacity

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Abstract

Natural antioxidants are mainly consumed through the consumption of fruits and vegetables and food composition tables used for epidemiological and nutritional studies are generally refer to the raw state of consumption of these bioactive compounds. However, it should be considered that food processing make a large impact on bioactive components affecting their total antioxidant capacities. The evaluation of the effect of food processing on natural antioxidants is of great importance as food processing is crucial to preserve and improve food nutritional and organoleptic properties in terms of quality and safety aspects. It is important to understand the results of food processing on the antioxidant capacity and bioavailability of the functional food products. Although food processing has some disadvantages including the loss of some valuable nutrients and formation of potential toxic food process compounds, there exist a wide range of advantages of food processing. Among them, the enhancement of total antioxidant capacity of various processed foods has been reported for long in many research studies. The increase in total antioxidant capacity has been related to release or increased bioavailability of natural antioxidants and the formation of new substances with enhanced antioxidant capacities related to the chemical reactions during food processing. This review is focused on the effect of food processing on the naturally occurring antioxidants and their bioavailability.

Keywords: Antioxidant, bioactive material, food processing

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Korunan ve Otlatılan Meraların Ot Kalitesi Bakımından Karşılaştırılması

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Özet

Bu araştırma; 2014-2015 yıllarında Elazığ Merkez İlçesine bağlı Hal Köyünde korunan ve otlatılan meraların Nisan, Mayıs ve Haziran aylarındaki ot kalitelerini belirlemek amacıyla yapılmıştır. İki yıllık araştırma sonuçlarına göre, kuru maddedeki ham protein oranı, ADF, NDF, SKM, KMT, NYD, P, Ca, Mg ve K oranları sırasıyla korunan alanda %15.42, %34.00, %49.45, %62.42, %2.48, 120.98, %0.27, %1.32, %0.30 ve %1.70, otlatılan alanda ise %15.36, %32.23, %48.86, %63.79, %2.53, 126.13, %0.28, %1.23, %0.31 ve %1.57 olarak tespit edilmiştir. İki yıllık araştırma sonuçlarına göre, her iki merada aylara bağlı olarak; Ca ve Mg oranları bakımından önemli bir değişim olmazken, ADF, NDF, P oranlarında artış ve K oranında ise azalma görülmüştür. Vejetasyon ilerledikçe her iki meranın ham protein oranında düşüşler görülmüştür. En yüksek ham protein oranı %19.71 ile ilk yıl Nisan ayında elde edilirken, en düşük oran ise %9.19 ile ikinci yıl Haziran ayında elde edilmiştir.

Anahtar Kelimeler: Korunan mera, otlatılan mera, kalite değerleri

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Elazığ İli Merkez İlçesi Hal Köyü'nde Korunan ve Otlatılan Alanların Botanik Kompozisyon Bakımından Karşılaştırılması

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Özet

Bu araştırma; 2014-2015 yıllarında, Elazığ Merkeze bağlı Hal Köyü merasında korunan ve otlatılan iki farklı alanın karşılaştırılması amacıyla yürütülmüştür. İki yıllık araştırma sonucuna göre bitki ile kaplı alan; korunan alanda %61.95, otlatılan alanda ise %65.45 olarak elde edilmiştir. Kaplama alanına göre botanik kompozisyonda; korunan alanda buğdaygillerin oranı %46.67, baklagillerin oranı %28.54 ve diğer familyalardan bitkilerin oranı %24.80, otlatılan alanda ise buğdaygillerin oranı %56.41, baklagillerin oranı %24.58 ve diğer familyalardan bitkilerinin oranı %19.02 olarak tespit edilmiştir. Ağırlığa göre botanik kompozisyonda buğdaygillerin, baklagillerin ve diğer familyalardan bitkilerin oranları sırasıyla korunan alanda %49.90, %37.11, %13.01, otlatılan alanda ise %47.79, %25.84, %26.37 olarak saptanmıştır.

Anahtar Kelimeler: Korunan, Otlatılan, Mera, Botanik Kompozisyon

Investigations on Yield and Quality Characteristics of Some Table Apricot Cultivars in Silifke/Mersin Ecological Conditions

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Abstract

This research was conducted between 2013-2014 in Silifke, utilizing 8 different apricot varieties, 5 from non-domestic origin 'Aurora', 'Ninfa', 'Bebeco', 'Precoce De Tyrinthe', 'Priana' and 3 from domestic origin 'Alyanak', 'Tokaloğlu', 'Çağataybey'. In material cultivars some phenological and pomological characters such as flowering, yield/tree, average fruit weight, flesh/seed ratio, acidity and total soluble solids (TSS) were examined. In terms of fruit yield, 'Ninfa' (91.13 kg/tree; 94.86 kg/tree), 'Priana' (83.87 kg/tree; 89.67 kg/tree) and 'P.De Tyrinthe' (77.74 kg/tree; 86.85 kg/tree) were found the most productive in both trial years. The biggest fruit were observed in 'Tokaloğlu', 'Bebeco' and 'P.De Tyrinthe' cultivars. As a result, 'Ninfa', 'Priana' ve 'P.De Tyrinthe' regarding to their precocity and yield were found suitable cultivars for the Silifke area.

Keywords: Apricot, Silifke, Yield, Fruit quality, Earliness

Bakı ve Kirletici Kaynağa Uzaklığa Göre Doğu Kayınının (*Fagus orientalis* Lipsky.) Yapraklarında Belirlenen Ağır Metal Oranının Yapay Sinir Ağları İle Tahmini

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Özet

Hızla artan endüstrileşmeye bağlı olarak doğal kaynakları ve toplum yaşamını tehdit eden önemli çevre sorunları ortaya çıkmaya başlamıştır. Bu çevre sorunlarından birisi de toprak, su ve bitkiler üzerinde meydana gelen aşırı ağır metal birikimidir. Ağır metallerin aşırı birikimi sonucunda canlı organizmaların fizyolojisi ve anatomisi bozulmakta ve kısa süre sonunda ya kalıcı fiziksel sorunlar ortaya çıkmakta ya da kitleler halinde ölümler meydana gelmektedir. Endüstriyel alanların ve açık maden işletmelerinin orman alanlarının içinde veya yakınında faaliyet göstermesi sonucunda ülkemiz ormanlarında ağır metallerin neden olduğu olumsuz etkilerin sonuçları görülmeye başlanmıştır. Bu kapsamda söz konusu bu araştırma Bartın-Gürgenpınarı yöresinde gerçekleştirilmiş, ağır metal türleri ve yoğunlukları biyoindeksör olarak kullanılan doğu kayını yapraklarında belirlenmiştir. Bu amaçla ICP-OES cihazından yararlanılmış ve tüm ağır metal okumaları bu cihazda gerçekleştirilmiştir. Yapılan analizler sonucunda yöredeki doğu kayını yapraklarında farklı düzeylerde Pb, Cu, Ni, Zn, Cr ve Cd ağır metal türleri tespit edilmiştir. Tüm ağır metallere ilişkin veriler 4 veri grubunda incelenmiş ve analizlere dahil edilmiştir. İstatistik analizlerde İleri Beslemeli Geri Yayınımli Yapay Sinir Ağı Modeli kullanılmıştır. Bu modelde 1 girdi katmanı, 1 gizli katman ve 1 çıktı katmanı kullanılmıştır. Dört adet veri grubundan toplanan sayısal değerlerin %84,2'sinin değerlendirilmesi ile elde edilen algoritma vasıtasıyla söz konusu ham değerlerin %15,8'nin test edilmesinde kullanılmıştır. Kullanılan verilerin %100,0'ü modellemede kullanılmıştır. Yapay sinir ağları kullanılarak yapılan tahminde ham verilerin 4 çıktı grubuna dağılımı %75,0-100,0 arasında değişmektedir. Yapay sinir ağları ile tahmin edilen ağır metal değerlerinin 4 çıktı grubuna dağılımı %66.7-100,0 arasında değişmiştir. Yapılan istatistik analiz sonucunda yapay sinir ağları ile oluşturulan sayısal model kullanılarak tüm ağır metallerin doğu kayını yaprağındaki konsantrasyon düzeyleri %100,0 başarı ile tahmin edilmiştir. Diğer taraftan yapay sinir ağı ile oluşturulan modelin 4 veri çıktı grubu için hesaplanan düzeltilmiş R² değerlerinin %97-%99 arasında değiştiği belirlenmiştir. Bu bulgulara göre Bartın-Gürgenpınarı yöresinde ve benzer ekolojik koşullara sahip alanlarda kirletici ana faktörler de göz önünde bulundurularak doğu kayını yapraklarındaki ağır metal türlerinin konsantrasyon düzeyi bakı ve kirletici kaynağa olan uzaklık gibi değişkenlere bağlı olarak %100 başarı ile tahmin edilebilmektedir.

Anahtar Kelimeler: Ağır metal, Doğu Kayını, Yaprak, Yapay Sinir Ağları.

Rearing Of *Spodoptera Litura* (Fabricius) (Lepidoptera: Noctuidae) On Artificial Diet And Its Predation By *Chrysoperla Carnea* (Stephens)(Neuroptera: Chrysopidae)

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Abstract

Research work regarding rearing of *Spodoptera litura* (Fabricius) (Lepidoptera: Noctuidae) on artificial diet by studying its pre-mature and mature adult stage parameters and predation by *Chrysoperla carnea* (Stephens) (Neuroptera: Chrysopidae) was conducted in the controlled laboratory condition at $26 \pm 1^{\circ}\text{C}$ 16:8 L:D and $65 \pm 5\%$ RH at the Department of Plant and Environmental Protection Bio-control Labs., National Agriculture Research Centre (NARC), Islamabad, during 2015. The results regarding different parameters along with % survival rate including total larval duration (19.1 days, 45%), pre-pupal period (3.4 days, 92%), pupal period (7.05 days 83%) and total immature duration from egg to adult stage (33.4 days, 33%) was recorded on artificial diet. Data regarding the developmental duration of mature stages of *S. litura*, the pre-oviposition period (2.4 days) oviposition period (5.4 days), post-oviposition period (1.63 days), female fecundity (1366 eggs) and adult longevity (8.66 days) were recorded on corn based artificial diet. Biological parameters and predatory potential of the predator, *C. carnea* were also carried out on the two stages of *S. litura* (eggs and 1st instar larvae) when offered as prey. The average mean of immature durations of *C. carnea* fed on *S. litura* eggs and 1st instar larvae recorded a significant effect of the diets (eggs and neonate larvae) on the total larval durations, total immature and % survival rate. No statistical difference was observed in the rest of the parameters of the immature duration of *C. carnea* fed on these diets, including 1st, 2nd and 3rd instar durations, pre-pupal period and pupal period. Eggs were found comparatively best by regarding higher % survival rate of *C. carnea* as compared with 1st instar larvae. Also Eggs showed best performance as compared to 1st instar larvae by recording lower total larval duration and total immature duration, from larvae hatching to adult stage of *C. carnea* i.e. 10.5 and 19.5 days respectively as compared with 11.3 and 20.7 days recorded for 1st instar larvae for 1st larvae, respectively. Result also showed that eggs were found the most appropriate diet of *C. carnea* because maximum predatory potential of 1st (13.2), 2nd (34.6) and 3rd instar (70.33) was recorded on eggs. Data regarding the developmental duration of mature stage of *C. carnea*, the pre-oviposition period and female fecundity was significantly affected by the diets fed to *C. carnea*, while no significant effect of diet was observed in case of oviposition period and post-oviposition period of *C. carnea*. Eggs were found the best diet as compared to 1st instar larvae by recording shorter pre-oviposition period (4.2 days) and higher fecundity (322 eggs). Also maximum adult female & male longevity was recorded when fed on eggs as compared to 1st instar larvae. The overall results showed that *C. carnea* showed better performance on the developmental duration including both immature and mature stages fed on the eggs as compared to 1st larvae of *S. litura*. Moreover 3rd instar larvae of *C. carnea* were found more voracious as compared with early instars.

Keywords: *Chrysoperla carnea*, *Spodoptera litura*, Biological parameters, Rearing, Diets

Accelerated and Natural Weathering Performance of Impregnated Wood Samples

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Abstract

Numerous chemicals are currently applied for wood protection against weathering. However, most of these chemicals cannot provide a long-term protection on wooden surface. Therefore, water repellent materials are needed to stabilize the wood surfaces and make it permanent against photodegradation. In this study, the influence of Poly Ethylene Glycol (PEG 600), N,N-(1,8-Naphthalene) hydroxylamine (NHA-H) and Methyl Hydrogen Silicon (MHS) against UV light was investigated. For this purpose, wood samples were impregnated with these chemicals according to full cell process (or vacuum). After impregnation, the samples were exposed to accelerated weathering (500 hours) and 6 months natural weathering. Optical and chemical changes on the surface of treated and untreated wood samples were studied by color changes, glossiness and Fourier Transform Infrared Spectroscopy (FTIR) analysis. When the results regarding total color change were examined, the best results were obtained in the sample group impregnated with MHS both in the accelerated outdoor test and the natural outdoor test. In the control specimens, new peaks were formed at 2927 cm⁻¹ and 1697 cm⁻¹ waves, while the chemical structure maintained its integrity in samples impregnated with MHS.

Keywords: Methyl Hydrogen Silicon, N,N-(1,8-Naphthalene) hydroxylamine, Poly Ethylene Glycol, Weathering

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An Alternative Approach for Multiple Comparison Problems in Agricultural Studies for a Large Number of Group Cases: ANOM Technique

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Abstract

ANOVA is one of the most commonly used statistical methods in comparing independent group means. However, ANOVA only tells us whether there is a statistically significant difference among the treatment group means or not. It does not tell us anything about which group mean is different from the others. If H_0 is rejected then an appropriate multiple comparison test (e.g. Tukey, SNK, Duncan, LSD, Bonferroni) should be applied after ANOVA to determine different means. Multiple comparison tests enable us to decide which treatments are better (superior) and which ones are worse. It is not difficult to determine different group means as long as the number of treatment groups is not large ($k \leq 10$). However, in some cases, especially studies related to plant breeding in crop science, researchers are commonly interested in comparing differences among a large number of treatment groups. Classical multiple comparison tests will not be appropriate to determine different means if k is very large. However, many researchers have still been using these procedures even though k is large. For such cases, there are some other techniques like Analysis of Means (ANOM) can be used to both identify treatments which are superior or worse than overall mean and similar to the overall mean. The usage of ANOM instead of the classical pairwise comparison procedures will make possible to get more detail and reliable results. Because the ANOM is not only used for comparing treatment means and determining superior or worse treatments but also comparing variances, proportions and correlations. Main purpose of this simulation study is to show usability of ANOM as a multiple comparison test especially when number of group is large number. ANOM Technique has also been applied to a real data set to determine superior, worse and similar treatments when compared to overall mean.

Keywords: ANOM, multiple comparisons, sensitivity, total accuracy



Effect on Fertility of Add Feeding at Late Gestation in Akkaraman Sheep

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Abstract

This study was carried out to determine of effect of supplemental feeding during the late gestation on birth and other weights (90 and 120 day) of lambs from Akkaraman sheep breed raised in Kırşehir. Data were collected from 580 Akkaraman lambs from 554 Akkaraman sheep which were born during 2015 birth season. Akkaraman sheep were divided into two groups. Wheat straw is given to both groups during pregnancy. One group (EYG), was given to concentrated feed supplement (400 g/animal) during the last gestation period. The other group (KG) was given only wheat straw during pregnancy. In this study, the live weights (birth, 90. and 120. day), survival rates of the lambs in various periods and reproductive traits of Akkaraman ewes were investigated. The averages of reproductive traits of Akkarman sheep such as sterility, fertility, twins, abortin, fecundity and litter size in EYG and KG groups were % 12, % 9, % 85, % 91, % 13, % 5, % 2, % 0, 0,96, 0,95 and 1,12, 1,04, respectively. The survival rates of lambs is 90th days and 150th days in EYG and KG groups were determined as 84, 80 % and 91, 91%, respectively. The means of the birth, 90 and 150. days age live weights in EYG and KG groups were found as 5,82±0,06 kg, 30,94±0,44 kg, 34,47±0,44 kg and 3,43±0,04 kg, 30,17±0,04 kg, 30,96±0,38 kg respectively (P<0.01). The effects of supplemental feeding, sex and birth type were found to be significant on the 90. and 150. days age live and birth weights of sheep (P<0.01). As a result, supplemental feeding during the late gestation are increased in live weights (born, 90. and 120. days).

Keywords: Gestation, Add feeding, Fertility, Akkaraman, Sheep

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Rootstock effects on sugar and organic acid contents of ‘Deveci’ pear

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Abstract

The aim of present study was to determine the effects of three rootstocks [quince BA 29 and EMC (*Cydonia oblonga*), and seedling of *P. communis*] on sugars and organic acid contents in ‘Deveci’ pear (*Pyrus communis* L.) cultivars during 2011-2015 years. In the study, oxalic, tartaric, malic, ascorbic, acetic, citric, fumaric and propionic acid as organic acids and fructose, sucrose, glucose and total sugar as sugars in the fruit samples were investigated in terms of rootstocks. Major organic acids for ‘Deveci’ pear were malic, ascorbic and propionic acids. Malic and ascorbic acid in BA 29 rootstock was higher than EMC and seedling rootstocks. Contrarily, propionic acid was higher in seedling rootstock. In terms of malic acid, BA 29 had the highest malic acid content (3425.3 mg 100 g⁻¹) while seedling rootstock had the lowest amount (2976.5 mg 100 g⁻¹). Significant differences were observed between rootstocks for tartaric, ascorbic, acetic, citric and fumaric acids. Tartaric, ascorbic, citric and fumaric acids in BA 29 and EMC rootstock were higher than the content of seedling rootstock. Fructose (32.4, 39.27 and 42.4 g kg⁻¹ fw, respectively) and glucose (18.7, 22.3 and 26.7 g kg⁻¹ fw) were the most abundant sugars in ‘Deveci’ pear for BA 29, EMC and seedling rootstocks. The total sugar content of the seedling rootstock (74.0 g kg⁻¹ fw) was higher than BA 29 (53.0 g kg⁻¹ fw) and EMC (65.8 g kg⁻¹ fw).

Keywords: Ascorbic acid, Fructose, Malic acid, *Pyrus communis*, Total sugar



A Review on Cultural Landscape Heritage in the City of Gaziantep

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Abstract

Cultural landscape inventory studies are important for understanding, evaluating and protecting the historical value of sites. The aim of this study is to analyse the cultural landscape structure in the city of Gaziantep from the viewpoint of urban heritage values. Information on historical structure of the city, urbanization process, and information on natural structure have been given. Considering urban and environmental development processes, landscape planning and design proposals have been produced to protect sustainably the cultural landscape heritage in the city. The results have displayed that cultural landscape heritages in the city of Gaziantep contain historical structures, archaeological sites and natural environment.

Keywords: Cultural landscape heritage, Urbanization, Gaziantep.

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Preliminary Fruit Evaluations Of F₁ Hybrid Pear Population, Tested Against To Fire Blight (*Erwinia Amylovora*)

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Abstract

Fire blight is the most destructive disease for pome fruits, especially pears. Using fire blight resistant cultivars is the most successful management method, as there is no certain management practice for disease. By this purpose, in our study, fire blight resistant and susceptible, and high fruit quality cultivars and genotypes were hybridized to obtain resistant hybrids against to fire blight. F₁ hybrid population, that obtained from these crosses, was artificially inoculated with different strains of *Erwinia amylovora*. Totally 10751 hybrids were inoculated, and 1221 hybrids were belong to group “A” (Very low susceptibility), 377 hybrids were in group “B” (Low susceptibility), and 606 hybrids were in group “C” (Moderate susceptibility). Hybrids that bear fruit belong to these combinations were analyzed. Superior hybrids were detected via weighted ranking method using two years data.

Keywords: Fire Blight, Resistance Breeding, *Erwinia amylovora*, *Pyrus communis* L.

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Correlation And Path Coefficient Analysis for Some Fresh Ear Yield Related traits in Sweet Corn (*Zea mays Sacchorata sturt.*)

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Abstract

The correlation between fresh ear yield components and other charectiristics of sweet corn were investigated with correlation oand desraned in a Randomized Complete Block Design with four replicates in Black Sea Agricultural Research Institute Ambarkopru test station in 2010-2012 maize growing season. Possible all singles relationships among 20 characters analized in our working were examined. According to result it was that statistically, significant-positive correlation was determined statistically between fresh ear yield and maturity, ear lenght, ear diameter, kernel row number, single ear weight, fresh cob weight, number of leaves per plant, number of marketable cobs, fresh grain weight, protein ratio and soluble dry matter content. Also, significant-negative correlation was determined between fresh ear yield and plant height, cob tip clearance. On the other hand non-significant correlation was determined between fresh ear yield and flowering time, ear height and oil ratio.

Keywords: Sweet corn, fresh ear yield, correlation coefficient, path analysis

Applications of High Intensity Ultrasound in Dairy Technology

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Abstract

Heat treatment is the most common and traditional method of processing in dairy technology to reduce the microbial spoilage and to provide safe end product with extended shelf life. However, heat treatment can cause chemical and physical changes which damage the organoleptic properties and reduce the content or bioavailability of some nutrients. Therefore, tendency towards alternative technologies to the heat treatment has increased in recent years and ultrasound is one of these innovative methods. Ultrasound applications have becoming an emerging technology in food industry as they are relatively cheap, simple, fast, non-toxic, environment friendly and energy saving processes. In dairy industry ultrasound applications have important advantages such as reduction in flavor losses and increase in homogenization efficiency, compared to high temperature heat treatment. Ultrasound is a sound wave with a frequency higher than the upper limit of human hearing capacity, typically higher than 20 kHz. Ultrasound applications in food processing are classified into two types: high frequency low intensity ultrasound (frequency: 100 kHz-1 MHz, power: below 1 W/cm²) and low frequency high intensity ultrasound (frequency: 20-100 kHz, power: 10–1000 W/cm²). High intensity ultrasound causes physical, mechanical and chemical changes in the material because of the acoustic cavitation which provides high temperature and pressure by collapsing the microbubbles. High intensity ultrasound applications in the dairy technology can be utilized to improve homogenization and emulsification reducing milk fat globule size, heat stability increasing microbial inactivation, viscosity and water holding capacity reducing syneresis, gel strength and firmness increasing coagulation properties of whey proteins, to reduce fermentation time improving lactose hydrolysis, and also to stimulate probiotic bacteria. This study summarizes the major applications of high intensity ultrasound in dairy technology. The basic principles of high intensity ultrasound and the applications in processing dairy products including research findings will be presented.

Keywords: High intensity ultrasound, dairy technology



Utilization of Real-Time PCR method for identification of *Listeria* spp. from homemade white cheese originated from Southeast Anatolia

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Abstract

In this study, it was aimed to investigate the utilization of real-time PCR method for the identification of *Listeria* spp., *Listeria monocytogenes* and *Listeria innocua* contamination in homemade white cheese produced around the southeast districts of Turkey. During the period of April-September 2015, 103 white cheese samples were randomly selected from the local market in order to investigate in the study. For the identification of *Listeria* spp. ISO 11290-1/A1-2004 method was used. Vitek 2 GP cards were used for the identification, using the *Listeria* spp. positive samples. DNA samples isolated from *Listeria* spp. positive samples were used in Real-Time PCR for the identification of *Listeria monocytogenes* and *Listeria innocua* by using specific primers and probes designed for the *hly* and *lin02483* genes. 6.7% samples were identified as *Listeria* spp. positive by Vitek 2 and Real-Time PCR revealed. 5.8 % sample were contaminated with *L. monocytogenes* whereas 0.97% sample was *L. innocua* positive. The results of Vitek 2 and Real Time PCR analysis were correlated perfectly. These findings pointed out that these products were produced under non-hygienic conditions and have potential risk for human health. Furthermore, revealing that Real-Time PCR is a faster and more reliable method than conventional methods for the determination and identification of these microorganisms.

Keywords: *Listeria* spp., homemade white cheese, Real Time PCR

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Breast Milk Components Against Pathogens and Various Diseases

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Abstract

Human breast milk initiates the first nutrient to the neonates. Breast milk intake comes with a lot of positive health outcomes such as developing newborn and infant immune and gastrointestinal systems and preventing allergies. Besides infant and mother bonding, it is required to protect infants against infections, chronic diseases with many immune-related substances. Human breast milk contains measurable levels of leukocytes and large quantities of secretory (s)IgA and nucleotides and a higher expression of immune-related miRNAs. In despite of these immunologic components, breast milk contains several nonspecific factors, such as lysozyme, lactoferrin and oligosaccharides which have antimicrobial effects. Very high concentrations of human milk oligosaccharides (HMOs) comprise a structurally diverse group of more than a hundred different complex sugars also known as prebiotics in human milk unlike the milk of most other mammals. Consequently breast milk supplies infants with high nutritional value food and primary prevention of many diseases with certain growth factors.

Keywords: human breast milk, infant, immune, antimicrobial

Influence of Cold Storage on Adult and Prepupa Stages of *Trichogramma brassicae* Bezdenko (Hymenoptera: Trichogrammatidae)

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Abstract

It is important to know the cold storage conditions in mass rearing of beneficial insects in biological control. For this purpose, the storage conditions of adult and prepupa stages of egg parasitoid, *Trichogramma brassicae* Bezdenko (Hymenoptera: Trichogrammatidae) at 10 °C were researched in the study. The adult and prepupa stages of parasitoids stored at this temperature, were transferred to rearing rooms adjusted to the conditions of 27 ± 1 °C, 70 ± 5% relative humidity and 16 hours light and 8 hours dark at five day intervals and parasitism performance of adult and development of prepupa stages were followed. Eggs of *Ephestia kuehniella* Zeller (Lepidoptera: Pyralidae) were used as hosts. In the experiments, equal number (50 ± 5) and fresh host eggs (0-24 hours) were given to the *T. brassicae* females that newly emerged from the eggs of *E. kuehniella* and after 24 hours of parasitization, the parasitized eggs were removed from parasitoids. The prepupae were stored four days after the 24-hour parasitization, while the adults were stored directly at 10 °C. The trials were conducted in six repetitions. Storage was provided for up to 15 days for both stages. It was found that the number of eggs parasitized by adults stored for 15 days in the adult stage decreased and that of the adults stored for 20 days died at the end of this period. It was determined that the storage period for the prepupa stage did not effective on the emergence of adult female and male individuals. According to the obtained results, it was determined that in case of storage of parasitoids in biological control, adult and prepupa stages could be stored in cold condition at the working temperature and the determined period.

Keywords: *Trichogramma brassicae*, *Ephestia kuehniella*, cold storage, prepupa, adult, parasitism, emergence rate

Determination of Furfural and Hydroxy Methyl Furfural in Some Marketed and Local Honey Samples by Using A Validated HPLC Method

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Abstract

Honey has been always considered as a healthy and natural product. There are different parameters showing the honey quality for example absence of contaminants, floral origins, production area and freshness. The most used parameter measuring overhaeting and age or freshness of the honey is content of furfural compounds of honey. Hydroxymethylfurfural (HMF) is an intermediate product in the Maillard reaction, and is also formed from the degradation of hexoses heated in acid solutions. Furfural (F) is another product that derives from the browning reaction or Lascorbic degradation. Furfural has been widely used as a marker of the browning reaction in juices, spirits and infant milk formulas. Investigation of these compounds in honey samples is needed to show the quality of honey. For this purpose, a new HPLC-DAD method was developed, optimized and validated according to the USP guidelines. This method developed was used on different honey samples collecting from the market and local producers. In this study, obtained results will be presented.

Keywords: Honey, furfural, hydroxymethyl furfural, HPLC, food quality

This study was supported by TUBITAK 215S651 coded project



Evaluation of the Sufficiency of Open Green Spaces in the Context of University Campuses: Example of Karadeniz Technical University Campus

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Abstract

The shrinking open green spaces as a result of rapidly growing urbanization and industrialization thanks to technological developments in the globalizing new world order are re-gaining their importance at the present time with their ecological, socio-cultural and recreational functions. The contributions made by open green spaces to individuals and to the region they are located in are undeniably big. Climate control, absorption of heat and noise, active and passive recreational opportunities, and mental and physical regeneration are among these contributions. University campuses, which are both public and autonomous areas, are institutions that embrace open green spaces where social and cultural activities are performed along with academic programs. Such areas where socio-cultural structuring is formed at universities are shaped in accordance with the expectations and needs of not only the students but the academic and administrative personnel as well. Green spaces, which provide the opportunity of mental and physical regeneration, occasionally lose their functions, thus failing to meet the demands of their users. From this point of view, the purpose of the current study is to reveal the level of sufficiency of open green spaces located on university campuses in terms of area and quality. In the scope of the study, conducted in the example of Karadeniz Technical University, the green spaces within the borders of the campus are evaluated against the criteria of distribution, accessibility, fittings and material quality, and planting. In the light of the acquired information, suggestions are made in respect to generating and planning quality open green spaces on university campuses.

Keywords: Open green space, Sufficiency, University Campus, Karadeniz Technical University



Determining The Types of National Park Landscape Characters

Abstract

Landscape Architecture studies show a wide variety of topics, including planning, design, and landscape management. Landscape planning and design, it aims to generate data to study the landscape character assessment study conducted by the European Landscape Convention parties have gained importance in our country along with. The main objective of our country be made without a moment ago the landscape character of the structure of this work is a guideline for planning studies. Therefore, the rapid diffusion of this kind of work is an important step in the process put forward more quickly and effectively in the planning. In this study Hatila National Park is located in the province of Artvin was chosen as the study area. The fact that the area has important resource values, the presence of conservation status, the long-term development plan, and a very variable character has been effective in the selection of Hatila National Park as a study area. As a result of the study, it was determined that Hatila Valley National Park could be represented with 1052 landscape character types and landscape character maps of the area were created. It is thought that the results of the study are important in terms of forming a base for planning studies for Hatila National Park.

Keywords: Landscape character types, Hatila National Park, Artvin



Diagnosis of Plant Species in Wetlands of Erzurum

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Abstract

Wetlands have great importance for ecological diversity, but they are degraded with misuse because of not knowing their potentials. Determining the factors of ecological characteristics for wetlands is one of the most important steps for wetland management. The objectives of this study were to determine biodiversity of wetlands in Erzurum province and to prepare database for the similar studies on wetlands and wetland plant species. Erzurum province has great potential for wetlands based upon the definition by the Ramsar Agreement. This study was covered the area of A8, A9 and B8 squares by the Davis Gridding Method in Erzurum. All important areas including rivers, creeks, channels, temporary wetlands, lakes and high ground-water areas within the study area were investigated. Totally in 287 sampling points within 6 main locations plant species were determined and herbariums for 110 plant species were established. 96 plant species belong to 41 families were determined. Among theses species, 29 families were obtained in Karsau location, 25 family in Serçeme Stream Location, 25 families in Aras River Location, 26 families in Oltu Stream Location, 31 families in Tortum Stream Location and 24 families in Çoruh River Location.

Keywords: Wetland, aquatic plant, Erzurum, landscape architecture



The Impact of Different Organic Fertilizers on the Yield and Quality Characteristics of Cauliflower Grown in the Field and Greenhouse

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Abstract

Cauliflower is located in the *Brassicaceae* family and production in Turkey is made in autumn and winter months. The study was carried out in 2016-2017 at Akdeniz University Agricultural Faculty Research and Application Greenhouse and in field conditions in Aksu province of Antalya. It was aimed to determine the effect of different organic fertilizers which can be used in organic cauliflower cultivation under the conditions of greenhouse and field cultivation to yield and some quality criteria. In the study, vermicompost, bat guano and synthetic chemical fertilizer were applied as fertilizer material. Serac F₁ cauliflower (*Brassica oleraceae* L. var. Botrytis) was used as plant material. At the end of the experiment; plant height, root length, stem diameter, leave width, leave length, number of leaves, fresh and dry weight of root, stem and crown, crown diameter, crown height and macro and micro nutrient contents were determined. As a result of statistical evaluation, it was determined that higher yield and mean values of plant growth and development were obtained in field conditions. When the effects of fertilizer applications are evaluated, it has been found that organic fertilizers can compete with chemical fertilizers. The application of chemical fertilizer was only statistically better than organic fertilizers in the K intake in field conditions and Ca intake in greenhouse conditions. Statistically, the highest crown fresh weight in field and greenhouse conditions was obtained from vermicompost application. At the end of the study, statistically significant differences were found between the growth conditions and fertilizer applications in terms of vegetative growth criteria, average yield and content of macro and micro nutrient elements.

Keywords: Cauliflower, vermicompost, bat guano, organic.

Genome wide analysis of *Phaseolus vulgaris* C2C2-YABBY transcription factors under salt stress conditions

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Abstract

The present study aimed to identify and characterize *C2C2-YABBY* genes at genome-wide scale in common bean. For this purpose various in-silico approaches were used and the results were confirmed through bench work studies. Bench work studies include Quantitative Real-time PCR (qRT-PCR) analysis of identified putative *PvulYABBY* genes in leaf and root tissues of two common bean cultivars namely Yakutiye and Zulbiye under salt stress condition. As a result of genome-wide in-silico analysis, we discovered 8 candidate *PvulYABBY* genes on common bean genome. The length of *PvulYABBY* proteins ranged from 173 to 256 amino acids (aa). PIs of *PvulYABBY* proteins were between 5.18 and 9.34 ranging from acidic to alkaline, and the molecular weight of *PvulYABBY*s were between 18978.4 Da and 28916.8 Da. The gene duplication analysis showed that three segmentally duplicated gene couples among identified 8 *PvulYABBY* genes were detected and segmentally duplicated gene couples were *PvulYABBY-1/PvulYABBY-3*, *PvulYABBY5/PvulYABBY7* and *PvulYABBY6/PvulYABBY-8*. The predicted number of exons among the 8 *PvulYABBY* genes varied from 6 to 8 and all *PvulYABBY* genes have found to be include introns within ORFs. A total of four *PvulYABBY* genes (*PvulYABBY-2*, *-4*, *-5* and *-7*) were targeted by miRNAs of five plant species and total of five miRNA families (miR5660, miR1157, miR5769, miR5286 and miR8120) were detected. According to RNAseq analysis, all *PvulYABBY* genes were up- or down-regulated except for *PvulYABBY-1* and *PvulYABBY-6* after salt stress treatment in leaf and root tissues of common bean. Expression levels of all putative *PvulYABBY* genes were analyzed by using qRT-PCR in leaf and root tissues of Yakutiye and Zulbiye cultivars under salt stress conditions. 6 out of 8 genes were found to be expressed in the leaves and these genes exhibited tissue and cultivar-specific expression patterns.

Keywords: *C2C2-YABBY*, transcription factors, RNAseq, in-silico analysis, qRT-PCR

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Investigation of the Effects of Mechanical Improvements on Drying Performance for Agricultural Drying Systems

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Abstract

The drying and storing of agricultural products is a method that has been practiced by humankind for hundreds of years. The main purpose of the drying process is to reduce the water content in the products which can not be kept fresh for a long time and to prevent the degradation of the products by microorganisms. Nowadays drying is done by using natural methods and it is accelerating the use of industrial systems in order to produce at higher capacities. These systems allow hygienic drying of agricultural products quickly without exposure to external influences. It is aimed that both the drying capacity and the drying performance of the drying systems higher. To achieve this, continuous improvements are made in equipment such as drying cabinet geometry, drying trays, conveyor belts and fans, motors. As systems use different materials, air distribution channels and the geometry of the trays are modified in the system to increase the performance. With mechanical improvements, it is aimed to increase the drying performance and decrease the drying time, and reduce the energy costs. In this study, different drying system designs were investigated and the effects of the improvements on these systems on drying performance were examined.

Keywords: Drying, Agriculture, Improvement, Drying Performance

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Contributions of Recreational Areas To The Life Quality In The Universities: Example Of Karadeniz Technical University Campus

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Abstract

Universities are one of the first actors to form a city. Universities that play an important role in establishing an organic link between society and the livable environment also enable for many recreational activities. In today's world, the university campuses where individuals with different religions, cultures and geographies come together offer positive contributions on students' individual developments and life qualities with their recreative areas. Life quality shows similarity between individuals' quality level of physical environment and psychological comfort level. In this sense, positive effects on the life quality of recreational activities cannot be neglected. From this point of view, in this study, the effects of the recreational areas on the student's life quality that have education in Karadeniz Technical University were determined. According to this, a questionnaire conducted by face-to-face interview technique to students to examine their life quality in terms of "physical environment, health, safety, personal and social development" criteria.

Keywords: Recreation, Life Quality, University campus, Karadeniz Technical University

Optimization of Solid-Phase Microextraction Conditions of Isomalt Containing Milk Chocolate: Response Surface Method Approach

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Abstract

In the production of quality chocolate, the chemistry of aroma substances behind cocoa and other ingredients is a characteristic. The chemical composition of chocolate is quite complex and several volatile and non-volatile substances contribute to their flavor, which is an important sensorial propriety. The pyrazine-class compounds, which are nitrogenous heterocyclic compounds characterized by low molecular weight and high volatility, are the major component groups of the chocolate aroma of the dominant substances in the cocoa, as well as the most studied group of volatile compounds. In this work a headspace/solid phase microextraction/gas chromatography coupled to mass spectrometry method was developed to evaluate the profiles of pyrazine-class compounds that contribute to the aroma of chocolate. In this study, milk chocolate samples containing isomalt, which is a polyol frequently used for sucrose substitution in sugar-free chocolates were investigated to selection of SPME fiber coating material. The optimization of the extraction conditions (extraction temperature (X1, 40–80 °C), extraction time (X2, 20–60 min) and equilibrium time (X3, 5–15 min) was carried out using multivariate strategies such as factorial design and response surface methodology. Forty-six volatile components were detected in chocolate samples using DVB/CAR-PDMS fiber. When compared with chromatograms of other fibers, high-resolution chromatograms were obtained with 50/30 m DVB/CAR-PDMS fiber. The SPME fiber coated with 50/30 m DVB/CAR-PDMS afforded the highest extraction efficiency, particularly when the samples were extracted at 57°C for 30 min and 10 min equilibrium time under dry conditions

Keywords: Non-cariogenic chocolate, Extraction optimization, SPME, Pyrazine

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Human Microbiota and Foods

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Abstract

The human body is colonized by a broad number of microorganisms, known as the human microbiota. They reside in human tissues and biofluids as skin, lung, oral mucosa, saliva, mammary glands, uterus, conjunctiva, and gastrointestinal tracts. The number of human microbiota is ten times higher than that of body cells, and their diversity and number affect human health. Microbiome and metagenome probably have important functions in health and disease including some cancer types, peptic ulcer, inflammatory bowel disease, diseases of the liver, obesity, and rheumatoid arthritis etc. The most of the microbiota is formed by the mouth and gastro intestinal system microorganisms and the chemical and microbiological content of the foods can be used to change the microbiota of these tissues. The aim of this study is to demonstrate the importance of microbiota in terms of health and its relationship with our foods.

Keywords: Human microbiota, Foods, Health



Effect of Intercropping of Corn (*Zea mays indendata* L.) with Soybean (*Glycine max.* L.) on the Seed Yield and some Yield Components in Samsun.

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Abstract

This study was carried out in 2013 in the province of Bafra in Samsun with the seeds mixed with maize and when farmed alone it was carried out in the farmer's field to determine grain yield and other yield items. In the research, three seeds were used as seeding form: lean soybean, one row of soybean, one row of corn and two rows of soybean and one row of corn. In the research; Total plant weight, pod weight, plant weight, grain weight, bark weight and branch numbers were investigated. The plant height, the first pod height, the number of full pods, the number of free pods, In mixed sowing, a reduction of 45-62% was observed in the yield of seedlings. The yields of pure seedlings were found to be high. LER values, which are important parameters for mixed sowing, are also determined in the study.

Keywords: Intercropping, soybean, corn, seed yield

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Strategies For Increasing Resistant Starch in Starchy Products

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Abstract

Starch is a significant dietary source of energy for humans. There have been recognized tree types of starch; rapidly digestible starch (RDS), slowly digestible starch (SDS) and resistant starch (RS). Rapidly digestible starch is digested within 20 minutes; slowly digestible starch is digested between 20 to 120 minutes and resistant starch is not digested in the stomach or small intestine. Resistant starch is thought to be dietary fibre since it cannot digest in the gastrointestinal track; instead of it is fermented by colon microflora. Dietary fibres have some healthy effect such as lowering blood cholesterol level, reducing colon cancer, regulating postprandial glucose response and promoting minerals absorption. RS have been categorised into five different forms; RS1 is physically inaccessible starch that can find in seeds or grains, RS2 is native granule starch which does not allow enzymes to hydrolyse it, RS3 is obtained from heated and cooled foods and it is named retrograded starch, RS4 is a chemically modified starch and recently RS5 recognized as an amylose-lipid complex starch. Various methods are used to producing RS such as autoclaving, heating/cooling, annealing, microwave heating, chemical applications, enzymatic debranching, irradiation and extrusion cooking. RS amount depend on some processing conditions for instance storing, temperature, moisture, number of heating/cooling cycles. Resistance starch can be used as dietary fibre in several starchy foods. In this study we will explain strategies for increasing resistant starch in starchy products.

Keywords: Resistant starch, increasing strategies, starchy foods



The Performance of Some Strawberry Cultivars in Kelkit Valley

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Abstract

In this study, the performances of three short-day varieties ('Camorosa', 'Sweet Charlie' and 'Camino Real') and a neutral day cultivar (Albion) were investigated at the altitudes of 400 m and 1000 m of Niksar province during the two years. In the scope of the study, some pomological observations such as fruit color, fruit weight, fruit length and fruit width, crown and panicle numbers per plant, total soluble solids, titratable acidity, pH, and some other chemical analyzes as well as phenological of plants were evaluated for both altitudes. At an altitude of, both as well as were carried out. Generally, there were two weeks between two altitudes at the first maturity, first harvesting and final harvesting. Sweet charlie continued to flowering after final harvest of short day plants like day-natural Albion cultivar. Fruit size was generally larger at high-altitude conditions than low-altitude in all cultivars. Besides, nutrient deficiency such as chlorosis and diseases such as root rot and botrytis were rarely seen at high altitude comparing to low altitude.

Keywords: Strawberry, Cultivar, Altitude, Performance, Pomology, Phenology



Applications of composite flour in development of Composite Wheat -Rye-Okra Seed Breads

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Abstract

Bread is essential part of the diet for people especially in the developing countries. Traditionally, bread are manufactured mainly wheat and rye flours. Composite flours, containing with different vegetable flours and with or without wheat, others cereals, have increased attention in the bread making technology from researchers and customers. This study was carried out to determine the effect of different mixture blend of composite flours on the chemical, textural properties of whole composite flours as well as the breads. The different blend compositions were tested in the preparation of composite Wheat-Rye-Okra seed (WRO) breads. Wheat flour ratio was kept as 70% of whole flour by weight. But the other enrichment flours were rye (R) and okra seed (O) ratios were changed 30:0, 20:10, 10:20, 0:30 for making composite bread. Experimental results were show that used to the increasing level of okra seed flour was improved protein, minerals and some other nutrients of composite flours and their breads. This is important for metabolism and other health-related conditions.

Keywords: Composite Flour, Composite Bread, Chemical Properties, Okra Seed Flour

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Utilization of Different Hydrocolloid Combinations in Keşkül Production

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Abstract

This study investigated that the effect of the utilization of different hydrocolloid combinations on keşkül production. Guar gum-xanthan gum, carrageenan-guar gum and carrageenan-xanthan gum combinations were assessed as hydrocolloid combinations in keşkül production. The changes of textural, and sensory properties of keşkül samples were examined at during storage period. While the textural properties were analyzed, the keşkül samples containing carrageenan were determined to have higher hardness, springiness and gumminess values compared to the other samples. Control keşkül sample was lower water general appreciation scores than that of another samples at 1. and 5. days of storage.

Keywords: keşkül, hydrocolloid, dairy dessert, textural properties, sensory properties

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In Vitro Micro-Propagation of Rosehip (*Rosa montana* Chaix subsp. *woronovii* (Lonacz) Ö. Nilsson)

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Abstract

Tissue culture is a propagation method widely used in modern agriculture technique as it allows production of many clonal plants from little material. There aren't any studies both in Turkey and around the World about rosehip. In this study, micro propagation attempt was made in *Rosa montana* L. Cultivar "Gerçekcioğlu" with shoot tip culture. Axillary buds were used as production material. Shoot explants were cultured on MS medium supplemented with three different concentrations of BAP, three different concentrations of NAA and two different concentrations of GA3 for shoot and root formation and multiplication. Explants in MS medium on shoot and root initiation were tested.

Keywords: In vitro, tissue culture, micropropagation, shoot tip, rooting, shoot regeneration

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Corn Seed Economics and Marketing in Turkey

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Abstract

In this study, it was aimed to put forward the importance of corn plant and seed which have important place human and animal nutrition in the world and country market. Corn producing is increasing in our country as it is all over the world. Turkey's maize production was 6.2 million tonnes in 2015. The effect of new seed varieties playing an important role in this situation. In our country, there is a share of foreign companies in corn seed, on the other hand near 200 hundred domestic seed companies also produce. Seed marketing, structure of the market, cost and price factors, government support are the outstanding issues in the development of the sector. Decisions to be made in seed production and marketing policies are crucial to ensure that GMO products do not enter the country and do not occur the future food shortages.

Keywords: corn seed, seed economy, seed marketing, Turkey

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Electronic Commerce Density in Animal Science in Turkey

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Abstract

Concept of globalism has been rise rapidly with increasing information and communication technologies (IIT). To get a permanent and strong position, companies should keep a close watch on the innovations in information and communication technologies. E-commerce, which was appeared integration of IIT to commerce, provides to come up to accurate customers faster with true tolls. E-commerce has been used also in livestock sector which has great importance in country economy. In this study, E-commerce Web sites including livestock sales were monthly recorded between the years of 2015 and 2016. The number of animals, means of sales prices, monthly sales frequency and mistakes of advertisements were determined. Results showed that animal breeders have been often used e-commerce Web sites, but it was understood that usage hasn't reached desired level, yet. As a trade volume, the first economy rank was captured with cattle advertisements with the level of 19 million TL and the second rank was for sheep advertisements with the level of 13 million TL. Number of advertisements for cattle was the highest among all species. When the sales time was examined, it is understood that cattle sales were occurred during the year, but sheep sales concentration was highly occurred in August and September. The general advertisements mistakes were determined as; headings were not reflecting the content, inadequate images in advertisements and advertisements for more than one animal species with same price. As a result, the most advantageous part of using e-commerce Web sites could be mentioned for livestock market was the third parties could be eliminated between sellers and customers. Also this commerce type will lead to true price formation. Usage of e-commerce in livestock market will grow and used more effectively by stakeholders was conceivable

Keywords: Internet, e-commerce, advertisement, sale



Design of an amperometric biosensor using polyaniline film to measure glucose concentration

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Abstract

Glucose oxidase catalyzes the oxidation of glucose in presence of molecular oxygen to form gluconic acid and H_2O_2 . When H_2O_2 oxidizes to O_2 at constant potential, current value, which is proportional with H_2O_2 also with glucose concentration, is measured. Enzyme electrodes based on the glucose oxidase (GOD) have been widely applied to construct biosensors for glucose determination. In this study, platin electrode with $0,09\text{ cm}^2$ surface area was electrochemically coated with polyaniline (PANI) and a glucosesensitive amperometric biosensor was constructed by immobilization of glucoseoxidase (GOD) onto PANI coated electrode. To do this, enzyme immobilization on PANI coated electrode was carried out firstly by immersing in GOD containing chitosan solution, and glutaraldehyde solution respectively. Thus enzyme electrode was constructed. PANI film was synthesized by two different methods namely chronoamperometric (CA) and cyclic voltammetry (CV) techniques at different conditions. Enzyme electrode of which PANI film was synthesized using CV method between $-0,1$ and $0,75\text{ V}$ applying 5 segment showed the highest current value. To determine the proper electrolyte medium, PANI film was synthesized in p-toluensulfonicacid (pTSA), sodium p-toluensulfonate (NapTS), oxalicacid (OXA) and sodium oxalate (NaOX) by CV technique. The glucose sensitivity of the electrodes were determined by measuring the current values chronoamperometrically. The highest current value was obtained from enzyme electrode which was constructed with PANI film synthesized in OXA medium. Glucose level of commercial wine, coke and apple juice determined by enzyme electrode as 2.1 mM , 186.38 mM and $115,30\text{ mM}$ respectively. The glucose levels of the samples were determined by also with commercial glucose kit as 2.4 mM for commercial wine, as $185,71\text{ mM}$ for coke as $115,43\text{ mM}$ for apple juice. As a conclusion, constructed electrodes can be used for glucose determination succesfully.

Keywords: Biosensor, Polyaniline, Glucose, Chronoamperometric, Cyclicvoltammetry, Oxalicacid

Acknowledgements:The authors wish to thank to the Mustafa Kemal University Department of Scientific Research Projects for supporting the this study (Project no:8905)

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The Effect of Different Glycine Betanie Applications on Plantlet Developments of Osmanli Strawberries

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Abstract

Glycine betaine (GB) is a quaternary ammonium compound that can be found in a wide range of bacterial, plant and animal species. The exogenous application of GB is a convenient method for the induction of crop tolerance to various abiotic stresses, and production quantity. The effect of GB seems to be strongly dependent on concentration, time and method of application, stress conditions, plant developmental stage, plant genotype, and species. In this study, the effects of different GB concentrations (0, 10, 20 mM) on plug plantlets of Osmanli strawberry cultivar. Results showed that as GB concentration increased chlorophyll index, numbers of crown, and crown diameters were increased. The best GB concentration for plantlet development was found to be 20 mM.

Keywords: plug plant, exogenous treatment, morpho-physiological characteristics

Determination of Drought Tolerance of Some Strawberry Cultivars Through Biochemical Analysis

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Abstract

Global warming, intensifying problem in Mediterranean climate, has affect on yield and quality of crops. Strawberry is a sensitive crop to abiotic stresses (drought salinity etc.) and this sensitivity is further increases in greenhouse production conditions. Hence, determinations to tolerance level to abiotic stress conditions of cultivars and genotypes are important for their cultivation and breeding. This tolerance level can be determined through morphological, physiological and biochemical analysis. In this study, tolerance levels of Osmanli and Festival cultivars have been determined through biochemical analysis (SOD- superoxide dismutase, CAT- catalase, MDA- malondialdehyde) of callus tissues under *in vitro* drought conditions (0, 3, 6, 9 and 12% PEG). There was a linear relation between PEG concentration and oxidative enzyme activities (SOD and CAT) and lipid peroxidation (MDA). Moreover, there was no callus development at high PEG conditions (9-12% PEG 6000). The highest SOD, CAT and MDA values were obtained from Osmanli cultivar, suggesting this cultivar is more sensitive than Festival cultivar to abiotic stresses.

Keywords: *Fragaria x ananassa*, *in vitro*, callus, SOD, CAT, MDA

Tillage Induced Changes in Biological Characteristics of A Typic Haploxerert Soil**

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Abstract

Tillage affect the composition and activities of microorganisms as well as other biological characteristics of soils due the impact on carbon cycle and soil structure. The purpose of this study is to determine the effects of different tillage practices which have been practicing from 2006 in a clayey soil on biological characteristics of soil. The experiment was conducted on the Arik Soil Series located at the Experimental and Research Station of Cukurova University. The tillage treatments are: Conventional tillage with stubble (moldboard plowing) (**CT-1**), Conventional tillage with stubbles burned (**CT-2**), Heavy disc harrow reduced tillage (**RT-1**), Rototiller reduced tillage (**RT-2**), Heavy disc harrow zero soil tillage (**HZT**), no-till or zero tillage (**ZT**) and **ST** on no-till treatment. Organic carbon (OC), total carbon (TC), total nitrogen (TN), microbial biomass carbon (MBC), potential mineralizable nitrogen (PMN) and β -glucosidase of surface soils were determined as the indicators of biological indicators of soil quality. All biological characteristics have been significantly ($P < 0.01$) affected by the tillage systems. The highest OC was obtained in RT-2 (2.53%), and fallowed by HZT (2.41). ZT (2.35), ST (2.17%), RT-1 (1.91%), CT-2 (1.71%) and CT-1 (1.53%). The MBC in all treatments ranged from 0.16 mg C g⁻¹ (in CT-2) to 0.33 mg C g⁻¹ (in ZT) dry soil. The highest mean TN content was obtained in ZT (0.19%) and the lowest was in CT-2 (%0.14). The use of moldboard plow once in ZT treatment caused a significant decrease in TN concentration of soils. Total C concentration of soils showed a very similar trend as in OC with the highest concentration in RT-2 (5.65%) and the lowest in CT-1 (4.80%). High concentration of OC in ZT treatment resulted in higher TN, PMN, MBC and β -glucosidase enzyme activity

Keywords: Organic carbon, Soil tillage, Microbial biomass carbon, Potentially mineralizable nitrogen, Soil biological properties

** This study was supported by TUBITAK (TOVAG 115O353)

Effects of Long-Term Soil Tillage Practices on Soil Chemical Characteristics[#]

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Abstract

Decline in soil fertility is a major limiting factor of agricultural productivity. Management practice applied is the main reason in reduction of productivity function of soils. Under intensive cultivation, soil erosion and loss in organic matter are the important processes responsible from the decline in productivity. The purpose of this study is to investigate the effects of tillage practices which have been practicing from 2006 in a clayey soil, on some of chemical properties related to the productivity function of soils. The experiment was conducted on the Arik Soil Series located at the Experimental and Research Station of Cukurova University. The treatments are: Conventional tillage with stubbles (moldboard plowing) (CT-1), Conventional tillage with stubbles burned (CT-2), Heavy disc harrow reduced tillage (RT-1), Rototiller reduced tillage (RT-2), Heavy disc harrow zero soil tillage (HZT), no-till or zero tillage (ZT) and strategic tillage on no-till treatment. Electrical conductivity (EC), pH, calcium carbonate, sodium adsorption ratio (SAR), organic matter (OM), plant available phosphorus (P) and potassium (K) of 0-10 cm, 10-20 cm and 20-30 cm depths were determined as the chemical soil quality indicators. The OM content in CT-2 (1.34%) treatment where the stubble burned and soil tilled and converted using a moldboard plow, was 73.9% and 77.6% lower compared to ZT (2.33%) and HZT (2.38%) treatments. One time tillage in ST reduced the OM content (2.13%) compared to ZT but the decline in OM was not significantly different. The highest P and K concentrations were obtained in 0-10 cm for all tillage practices and the concentrations reduced by the depth. The pH, EC, calcium carbonate and SAR values were not significantly different within 0-30 cm depth. The tillage practices applied did not cause to accumulate salt, calcium carbonate or any of water soluble cations within the 30 cm of soil surface.

Keywords: Soil tillage, Organic matter, Available phosphorus, Potassium, No-tillage

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Effect of Previous Legume Crops and Sowing Dates on the Sustainability and Environmentally Friendly Silage Corn Cultivation

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Abstract

This study was conducted in order to determine the effect of different previous crops and sowing dates on the sustainability and environmentally friendly silage corn cultivation under typical Mediterranean climatic conditions, during summer period of 2013 and 2014. The experiment laid out in a split-plot design in the form of randomized complete blocks with three replications, main plots were sowing dates (early spring, mid spring and late spring) and sub plots were previous crops (*Vicia sativa*, *Vicia villosa*, *Lathyrus sativus*, *Trifolium resupinatum* and *Pisum arvense*). The treatments with 0, 100 and 200 kg N ha⁻¹ application were aimed for comparison, zero dose being control. Some silage quality components such as silage loss, color, structure and odor were assessed. Results indicated that, there were no significant differences among sowing dates and N-doses treatments in terms of silage quality. Inorganic fertilizer use can be limited by growing previous legume crops such as *Vicia villosa* and *Vicia sativa*, without losing any silage performance of maize in silage crop production.

Keywords: sowing date, previous legume crop, silage quality, *Zea mays*.

Comparison of Vacuum and Conventional Cooling of Cooked Breaded Chicken Meat

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Abstract

Vacuum cooling is a widely used rapid cooling method, which has been proven to be one of the most efficient cooling methods available and therefore, it is extensively used for cooling some agricultural and food products. It is a rapid evaporative cooling technique for any porous product which has free water. This technique is used for pre-cooling of leafy vegetables and mushroom, bakery, fishery, sauces, cooked food. The aim of this paper is to apply vacuum cooling technique for the cooling of the cooked breaded chicken meat and show the pressure effect on the cooling time and temperature decrease. Comparison of vacuum cooling with the conventional cooling results has been given in the study. The variation of the centre and surface temperature of the cooked breaded chicken meat have been given for two cooling methods. In order to determine the variation of the centre and surface temperature of the cooked breaded chicken meat, vacuum chamber humidity and temperature, variation of pressure during the vacuum cooling are measured for two different set pressure 0.7 kPa and 1 kPa. The results for the two different pressures are given in the study. On the other hand, conventional cooling has been carried out for 5 °C and 2 °C.

Keywords: Vacuum cooling, Cooked Breaded Chicken Meat, Conventional Cooling, Pressure, Temperature

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Body Condition Scoring in Sheep

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Abstract

The condition is always important in conscious sheep breeding. General appearance of the sheep in the flock provides information about the feeding and environmental conditions in which the sheep has been raised. Body Condition Score (BCS) provides the status of each sheep in the flock within a scale. BCS is qualified by giving individual score for each sheep. The average BCS of the flock allows us to have effective knowledge for the general conditions of the animals. In sheep, BCS determined by giving numbers between 1 to 5; 1- Emaciated, 2- Thin, 3- Good (Average), 4-Fat, 5-Obese. The BCS is determined by the state of muscle and fat formation in the space between the spinal process and the transverse process, which is the manual reprinting of the region between the short ribs and the sacrum in the waist of the sheep. The average BCS should be within the range of 2.5-3.5 in sheep during an ideal breeding season. These scores vary depending on whether the sheep are in mating season, lambing season, lactation period or dry period. In this review, the importance of body condition score in sheep and how to determine it is examined..

Keywords: Sheep, Body Condition Score

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Effects of Topping at Different Times on Yield and Yield Parameters in Cotton (*Gossypium hirsutum* L.)

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Abstract

This study was conducted in the Research Fields of Faculty of Agriculture, Dicle University in 2012 in order to determine the effects of topping at different stages of growth on yield and fiber quality in cottons grown in Diyarbakir conditions. In the study, cotton varieties of Primera, Deltapine 499, Stonville 453 and Berke (*Gossypium hirsutum* L.) were used as material. Trial was established using the pattern of Divided Parcels in Randomly Selected Blocks with 3 replications. Application times (control, 100, 115, 130 and 145 days after sowing) constituted the main parcels; cotton varieties (Berke, STV 453, DP 499, Primera) the sub-parcels. It was determined in the study that topping done 100 and 115 days after sowing date increased the seed cotton yield, seed cotton weight per boll, gin output, and fiber length; decreased the plant height and number of non-open bolls; had statistically no significant effect on characteristics such as 100 seed weight and fiber fineness, short fiber index, fiber elongation, spinning consistency index, fiber uniformity.

Keywords: Topping, Yield, Yield Parameters, Early Maturing

***In vitro* bulblet production from immature embryo explants of *Ornithogalum pamphylicum*, an endemic and endangered geophyte**

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Abstract

Ornithogalum pamphylicum, a potential ornamental plant, is an endemic and endangered geophyte of Turkey. *In vitro* propagation is an alternative and useful method to produce some *Ornithogalum* species. Different explants and plant growth regulators are used for *in vitro* propagation of various species of *Ornithogalum* genus. In this study, *O. pamphylicum* was propagated from immature embryo explants. After sterilization, explants were placed on MS (Murashige and Skoog) medium containing various concentrations and combinations of BAP (6-benzylaminopurine), NAA (α -naphthaleneacetic acid), TDZ (thidiazuron) and 2,4-D (2,4-dichlorophenoxy acetic acid). Statistically differences were determined among the mediums for bulblet production from immature embryo explants. The best regeneration ratio were obtained from MS medium supplemented with 2 mg l⁻¹ BAP and 0.25 mg l⁻¹ NAA. The percentage of callus and bulb regeneration varied according to the medium which were supplemented with different amounts of plant growth regulators.

Keywords: *Ornithogalum pamphylicum*, immature embryo explant, *in vitro*

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Irrigation Water Management Characteristics of Altinkaya Irrigation Union: The Case of Bafra Plain, Turkey

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Abstract

Irrigation water unions play a crucial role in providing water-efficient irrigation systems, preparing the agricultural lands to irrigation, and selecting and applying the most appropriate irrigation methods in agriculture. For this purpose, the main objective of the study is to determine the current management characteristics and the performance of irrigation water distribution of Altinkaya Irrigation Union between 2009 and 2013. Data were collected from the managers of irrigation union via a questionnaire and field observations. Performance indicators such as annual distributed irrigation water quantity per hectare, irrigation ratio etc. were used to determine the management characteristics of Altinkaya irrigation union. Research results showed that water payments had the highest share among the income items, while personal cost was the highest in total cost of union. In the research area, the quantity of irrigation water distributed to per irrigated land had been reduced over four years, indicating that irrigation water sources became a scarce production factor in the research area. Therefore, we are in the opinion that the excessive irrigation water usage should be controlled, efficient use of irrigation water among the farmers should be enhanced. In addition, revision of the current system using for pricing of irrigation water in the research area may reduce the management costs of unions.

Keywords: Bafra Plain, Irrigation water, Management Characteristics, Performance of Water Distribution

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Effects of thyme (*Thymus vulgaris* L.) on cholesterol parameters of *Oreochromis niloticus*

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Abstract

Thyme has strong antimicrobial and antioxidant activity due to its very high contents of thymol, p-cymene, carvacrol, eugenol, and 4-allylphenol . The effects of thyme (*Thymus vulgaris* L.) in the diets of *O. niloticus* have been studied using cholesterol parameters. In this study, the blood of Nile tilapia was investigated. In this purpose, fish were fed with diet supplemented with 1%, 3% and 10% of thyme extract for 24 and 72 hours. The results show that fed of 3% and 10% thyme extract increased blood cholesterol parameters in 72 hours. These results show that oral administration of thyme extract may be beneficial for fish.

Keywords: *Thymus vulgaris*, *Oreochromis niloticus*, Cholesterol,

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Determination of Performances of Some New Cotton Breeding Lines Against Cotton Wilt Disease Caused By *Verticillium Dahliae* Kleb in Diyarbakir Ecological Conditions

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Abstract

This study was performed at Dicle University field crops field in 2016. The aim of this study was to determine the reaction of the new cotton varieties to *Verticillium* wilt disease. The field experiment was conducted at natural infested field with the cotton wilt disease and tested every year resistant breeding studies. It is known that Deltapine-396 (DP-396), Beyaz Altın-119 (BA-119), Stoneville-468 (STV-468) varieties as a control against *Verticillium* wilt disease. The data for disease intensity on stem was evaluated after harvest. According to diseases intensity were determined significant important between cotton breeding lines and varieties. As a diseases intensity, STV-468, ADAY-1, ADAY-2, ADAY-3, ADAY-4, ADAY-5, and ADAY-9 were determined more tolerant cotton genotypes. According to disease incidence (%) were determined significant important between cotton breeding lines and varieties. As a disease incidence, STV-468, DP-396, ADAY-1, ADAY-2, ADAY-5, ADAY-7, and ADAY-9 were determined more tolerant cotton genotypes.

Keywords: Cotton, wilt, *Verticillium dahliae* Kleb., resistance



Use of Natural Color Sources in Poultry Feeding

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Abstract

Egg color and broiler skin color can be changed by supplying feed additives in animal ration. Therefore, different color sources are widely used to obtain desired colors in the animal products or to preserve current color or to obtain of the consumer demands. However, in recent years, synthetic color additives used in animal nutrition is thought that it can be hazardous effects on human health. Nowadays, researches have been concentrated on use of natural color feed additives which affect animal and human health positively, instead of the synthetic additives. The natural color sources are studied under three main groups including anthocyanins, carotenoids and chlorophyll although natural color sources include betalaines, anthroquinones, naftachinones, irodoits, phycocyanins, animal pigments, caramelization and maillard reaction occurring pigments. Carotenoids are the most commonly used materials that include pigments in poultry rations. Pigment-rich products such as yellow corn, flaxseed, corn gluten meal, marigold meal, alfalfa flour, red pepper are natural sources which can be used in broiler chicken and laying hen rations. Certain powders and extracts of lycopene, lutein, linseed oil, black grape pulp, are natural coloring sources containing carotenoids which can be used for this purpose. In this review, the possibilities of enriching the color and / or nutritional content of poultry meat and eggs by using natural coloring materials have been discussed.

Keywords: pigments, carotenoids, poultry, egg yolk, meat quality

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The Effects of Different Nitrogenous Fertilizer Forms, Doses and Storage Conditions to Yields, Chlorophyll, Nitrate and Nitrite Accumulations of Rocket Plants

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Abstract

This study was carried out in 2009 in the district of Hatay-Samandağ. In the experiment, 5 nitrogen doses ($D_0:0 \text{ kg da}^{-1} \text{ N}$, $D_1:10 \text{ kg da}^{-1} \text{ N}$, $D_2:20 \text{ kg da}^{-1} \text{ N}$, $D_3:30 \text{ kg da}^{-1} \text{ N}$ and $D_4:40 \text{ kg da}^{-1} \text{ N}$) and 5 nitrogenous fertilizer forms, consisting of different ratios of ammonium sulphate and ammonium nitrate fertilizers ($F_1:100\%$ ammonium sulphate, $F_2:25\%$ ammonium nitrate + 75% ammonium sulphate, $F_3:50\%$ ammonium nitrate + 50% ammonium sulphate, $F_4:75\%$ ammonium nitrate + 25% ammonium sulphate and $F_5:100\%$ ammonium nitrate) were applied to rocket plants with 3 replications. Although, nitrogen applications increased yields, the number of leaves and plant biomass of rocket, the amounts of dried matter decreased. Nitrogen applications resulted with high yields changed according to harvest periods. It was found that, in the first harvest, corresponding to the hot period, D_4F_1 applications and in the second harvest, corresponding to the cold period, D_1F_5 applications were resulted with the highest yields. Generally it wasn't determined statistical importance about nitrate and/or nitrite accumulation and chlorophyll contents of rocket plants. Highest nitrate and nitrite values were found as 765.2 mg kg^{-1} ve 11.05 mg kg^{-1} . Limit nitrate values for rocket plants was accepted as 1500 mg kg^{-1} , therefore nitrate values determined in this experiment couldn't thought as a risk of human health and nitrogen doses applied in this study could suggest for rocket plants. Nitrate and chlorophyll contents were decreased paralelly to increasing storage period, although nitrite values were increased by storage.

Keywords: Rocket, forms and doses of nitrogenous fertilizers, storage, nitrate, nitrite, chlorophyll

The role of hyperforin on adipocyte differentiation in 3T3-L1 pre-adipocyte cell line

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Abstract

Hyperforin is a phytochemical produced by some of the members of the plant genus *Hypericum*, notably *Hypericum perforatum* (St John's wort). Hyperforin (along with adhyperforin) is believed to be one of the three chief active constituents of St. John's wort -the other two being hypericin (along with pseudohypericin) and several flavonoid constituents. Although anti-obesity effect of *Hypericum perforatum* is well-known, the role of hyperforin isolated from *Hypericum perforatum* on adipocyte differentiation is not known very well. The aim of this study is thus to identify and characterize the transcription factors in the process of adipocyte differentiation after the hyperforin treatment. In this study, concentration of 0, 25, 50, 75 and 100 nM hyperforin were treated to 3T3-L1 pre-adipocytes in cell culture. MTT cell cytotoxicity, cell viability with trypan blue staining, Lactate Dehydrogenase (LDH) enzyme assay, triglyceride content assay, Glycerol-3-Phosphate Dehydrogenase (GPDH) activity, Oil Red O staining and mRNA levels of transcription factors (*PPAR γ* , *C/EBP α* and *SREBP-1c*) were investigated in hyperforin induced 3T3-L1 pre-adipocyte cell line. Hyperforin treatment decreased cell population growth of 3T3-L1 pre-adipocytes, assessed with trypan blue staining, MTT test and rising of LDH release proportion. Hyperforin inhibited GPDH activity and intracellular triglyceride content in 3T3-L1 adipocytes in all treated groups in a dose-dependent manner. Oil Red O staining indicated that hyperforin inhibited adipocyte differentiation in 3T3-L1 adipocytes in all treatment groups. In this study, it was revealed that exposing 3T3-L1 pre-adipocytes and differentiating postconfluent pre-adipocytes to different doses of hyperforin decreased *PPAR γ* , *C/EBP α* and *SREBP-1c* mRNA levels as compared with their controls without treatment in dose dependent manner. Although, reduction of *PPAR γ* and *C/EBP α* mRNA levels were statistical significant, this decrease was not significant in *SREBP-1c* mRNA level. This study demonstrated that hyperforin treatment inhibited the adipogenesis through the down-regulation of transcription factors, especially *PPAR γ* and *C/EBP α* . Alternative mechanisms may involve cell cycle arrest and the induction of apoptosis. As a result, consumption of hyperforin may contribute to the maintenance of body weight and prevent the development of obesity.

Keywords: 3T3-L1 cell line, adipocyte differentiation, hyperforin, transcription factors



The Population Fluctuation of Insects in Sunflower Fields, Malatya, Turkey

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Abstract

Population fluctuations of sunflower pests were identified in an unmanaged sunflower field in Battalgazi district of Malatya province during 2016 and will be studied in 2017. Pests on leaves were counted weekly between June and October. Thripidae, Cicadellidae and Aphididae families were seen on sunflower leaves. In research, Thripidae family was reported as the most abundant pest group. Cicadellidae population was low level than Thripidae population. Aphididae populations were the lowest. The highest population of Thripidae, Cicadellidae and Aphididae were observed on 19 July, (108 numbers of 25 leaves), 18 August (46 numbers of 25 leaves) and 25 August (53 numbers of 25 leaves), respectively. The results proved that Thripidae, Cicadellidae and Aphididae families were most important pests on sunflower.

Keywords: Sunflower, pests, Thripidae, Cicadellidae, Aphididae

The effect of *Vaccinium myrtillus* L. extract on oxidative stress in the brain tissue of diabetic rats

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Abstract

Bilberry (*Vaccinium myrtillus* L.), also called European blueberry, is one of the most important wild berries in northern Europe, because of their potential benefits for human health. The berries are a rich source of various phenolic compounds, which have been linked to their antioxidant potential. Bilberry contains particularly high levels of anthocyanins, possessing antimicrobial, anti-inflammatory and anti-mutagenic properties. This study aims to examine the effect of *Vaccinium myrtillus* L. on the oxidative stress in brain tissue of experimental diabetic rats. In this study, 28 rats were disturbed into 4 different groups. Group I was control group, group II was diabetes group which was administered single dose of streptozotocin (45 mg/ kg), in Group III, rats were not made diabetic but given extract of *Vaccinium myrtillus* L. (1.2 g/kg) by gavage for 21 days; Group IV rats were made diabetic and given extract of *Vaccinium myrtillus* L. (1.2 g/kg) by gavage for 21 days. After these practices, all the animals were sacrificed, and the brain tissues of each animal were isolated. These tissues were homogenized and superoxide dismutase (SOD), catalase (CAT) activities and malondialdehyde (MDA) and glutathione (GSH) levels were examined. According to our results, MDA levels increased, CAT, SOD activities and GSH level decreased in group II comparing with group I ($p<0.05$). Furthermore, MDA levels decreased, SOD activity and GSH level increased in group IV comparing with group II ($p<0.05$). Catalase activity also increased in group IV comparing with group II, but this reduction was not statistically significant ($p>0.05$). According to these results, it can be suggested that *Vaccinium myrtillus* L. was found to reduce the oxidative stress. As a result, we can suggest that extract of *Vaccinium myrtillus* L. may be used for the treatment of diabetes.

Keywords: *Vaccinium myrtillus* L., diabetes, brain, oxidative stress

Improved Rooting of Micropropagated Almonds shoots (*Prunus dulcis* (Mill.) D.A. Weeb)

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Abstract

The aim of this study was to optimize the rooting stage of some economically important almond cultivars that are difficult to root *in vitro*. Almond cultivars Nonpareil, Ferragnes, Tuano and peach x almond hybrid rootstock GF-677 were used as the experimental material. For the growth of cultures, a new culture medium developed for almond micropropagation was superior to Nas and Read Medium. Off the plant growth regulators tested meta-Topolin provided higher shoot numbers and produced longer shoots compared to Benzyladenine. To induce root induction, microshoots were subjected to various root inducing treatment: Microshoots were left in the dark, active charcoal and phloroglucinol were added into the rooting medium, bottom parts of microshoots were dipped into IBA solution, the concentration of the rooting medium was modified, or the number of subcultures was increased. Addition of active charcoal or ploroglocinol into the rooting medium and leaving microshoots in the dark for one week had no positive effects on rooting. Rooting ratio on full strength and half-strength media were similar. No rooting was observed with cultivars Nonpareil and Ferragnes. Best rooting percentage (64%) was obtained with GF-677 in the presence of 1 mg·L⁻¹ IBA. Phloroglucinol had no positive effects on rooting but enhanced shoot growth. The highest rooting percentage (67%) was obtained using microshoot that were sub cultured eight times.

Keywords: IBA, rooting, *Prunus dulcis*, *in vitro*, phloroglucinol



**Determination of agronomic performances in crested wheatgrass
(*Agropyron cristatum* L. Gaertn.) in the Central Anatolian Region in Turkey**

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Abstract

Biodiversity and rich genetic resources are very important for breeding programs. The breeding programs should be supplemented and enriched with broad-based genetic materials. Grasses and legumes extensively exist on vegetation of the rangelands in the Turkey. The crested wheatgrass is palatable perennial grass and has good quality herbage. It may be grown on rangelands and marginal areas for hay production under the semi-arid condition. Firstly the genotypes of that were screened and tested for the morphological and phenological characters on nursery plot. Then, one genotype with 18 lines, G-465, was identified as a promising variety candidate. After that the regional trials were set up with advanced genotype (G-465) and population during the years of 2007 to 2010 in Yenimahalle and Gölbaşı towns of Ankara province. The objective of these trials was to determine their adaptation ability, the yield potential and the quality properties under the semiarid conditions. All data were statistically analyzed and two genotypes features were compared by F test. The morphological and agronomical features were examined as height and diameter of main stem and, internode distance long, node numbers in main stem, long and wide of flag leaf, flag leaf, yields of herbage and hay. Herbage and hay yields in G-465 were 546.6 kg/da and 152.8kg/da, respectively. The morphological characters as main stem length, main stem diameter, length of internode, node numbers in main, flag leaf length and flag leaf width in G-465 were 53,0 cm, 1,9 mm; 11,8 cm, 3,6; 10,4 cm , 5,9 mm, respectively. Correlation analysis was done and determined high relationship MSL, LI, FLL, FLW and GHY with HY. No significant differences found between them in crude protein content. G-465 had higher crude protein content (21.1%), than population (20.1%) in 2008. But their relative feeding values are almost similar. The trials results indicated that the G-465 genotype found promising for variety registration.

Keywords: Crested wheatgrass genotype, morphological, agronomical features

The detection of antibiotic resistance with the help of isolation and identification of *Campylobacter spp.* from aborted sheep fetuses and the livers of sheep, goat and cattle slaughtered by the slaughterhouses of Afyonkarahisar and Kutahya provinces

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Abstract

In this study, the presence of *Campylobacter spp.* was investigated in a total number of 150 liver samples obtained from clinically healthy 50 sheep, 50 goats and 50 cattles slaughtered by the slaughterhouses of Afyonkarahisar and Kutahya provinces during the period of January 2016 to May 2016 and 44 aborted sheep fetuses obtained from the same region between April 2015 and May 2016. Isolated strains with the help of culture technique were identified with API Campy (Biomérieux, France) test kits. After identification, antibiotic resistance of strains was determined by disc diffusion method. *Campylobacter spp.* were isolated from 7 samples (15.91 %) of 44 aborted sheep fetuses. After identification of *Campylobacter spp.* it was determined that 5 samples (71,43 %) of 7 were *C. fetus ssp. fetus* (% 71,43) and 2 samples were *C. jejuni* (% 28,57). Out of 50 each liver samples, *Campylobacter spp.* were isolated from 3 sheep liver (6,00 %) and 1 goat liver (2,00 %). 3 of isolates were identified as *C. jejuni* (75,00 %), 1 of isolates as *C. coli* (25,00 %). *Campylobacter spp.* were not isolated from cattles. When 11 *Campylobacter* isolates were analysed, the resistance rates for ciprofloxacin and tetracycline were 45,5 %, erythromycin 27,3 %, ampicillin 9,1 % There was no resistance against gentamicin, chloramohenicol and streptomycin. The rates of susceptibility to antibiotics used were 72,7 % for ampicillin, 54,5 % for erythromycin, 90,9 % for gentamicin, 100 % for chloramohenicol, 72,7 % for streptomycin, 27,3 % for ciprofloxacin and tetracycline. As conclusion; it was seen that the types of *Campylobacter* had an important place among the reasons of abortion in our region as well. The profile of antibiotic resistance revealed made us think *Campylobacter spp.* show resistance at varying rates depending on the geographical area. To avoid the use of unconscious antibiotics activities that will raise awareness should be developed and implemented for breeders. For the purpose of epidemiological mapping such isolation and identification studies should be spread throughout the country at an increasing rate.

Keywords : Antibiotic resistance, *Campylobacter spp.*, sheep fetus, cattle, sheep and goat liver



Effects of Biochar Application on Physiological Development of Dwarf Bean

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Abstract

Increasing population and its high nutritional needs accentuate the requirement of endurable agriculture. In past few years, there has been a great emphasis on the usage of biochar for soil remediation. It is widely being used, specifically in developing countries as a soil regulator due to its mitigating effects on physical and chemical properties of soil. However, its utilization for soil amendment is still limited in several countries, including Turkey. Different fertilizer applications and soil amendments become prerequisite in arid and semi-arid regions like Central Anatolia where soil is deficient in organic matter and plant nutrients. Focusing these issues, in this study we determined the effects of Biochar on physiological development of dwarf bean under greenhouse growth conditions. We collected data for nutrient elements uptake, yield and other related plant growth parameters after barnyard manure and biochar application. As compared to control, we obtained 19% and 16% increase in plant height in barnyard manure and biochar treatment, respectively. Additionally, an increment of 77% in fresh weight and 30% in number of beans was investigated as compared to control in case of biochar treatment. We may conclude the positive effects of biochar application on plant growth and development from the determined outcomes of the study. Such studies may provide a roadmap for upcoming research strategies related to the utilization of Biochar for different plants growth and soil improvement.

Keywords: Biochar, dwarf bean, organic material, plant nutrients



Polyphenol Profile of *Hibiscus sabdariffa* L.

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Abstract

Phenolic compounds known as polyphenols are found in various fruits, vegetables, beverages. These compounds are a group of organic compounds having one or more hydroxyl groups on the aromatic ring and/or rings [1]. According to reported studies, they are beneficial to health due to anti-carcinogenic, anti-tumor and anti-oxidative properties [2]. *Hibiscus sabdariffa* L. commonly known as roselle, red sorrel or karkade. Many types of phenolic compounds are found in *Hibiscus sabdariffa* L.. Moreover, this plant is also rich in terms of proteins, fats, carbohydrates, acids, minerals, vitamins. *Hibiscus sabdariffa* L. is commercially important for food industry. Because it is use in the production of beverages, juices, jams, and syrup [3]. In the present study, polyphenol profile of *Hibiscus sabdariffa* L. was examined. For this aim, 13 polyphenols including gallic acid, (+)-catechin, (-)-epicatechin, caffeic acid, chlorogenic acid, hesperidine, p-coumaric acid, phlarizidinedihydrate, ellagic acid, myricetin, quercetin and rutin were investigated using high performance liquid chromatography-diode array detector (HPLC-DAD). Maximum UV absorption spectrum of each single phenolic compound were used determination of polyphenols and they were identified depend on retention time. When the polyphenol profile of *Hibiscus sabdariffa* L. is examined, its were determined an excellent and rich source in terms of polyphenols.

Keywords: *Hibiscus sabdariffa* L., polyphenols, HPLC-DAD.

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Element Composition of *Hibiscus sabdariffa* L. Used in Food Industry

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Abstract

Hibiscus sabdariffa L. contains phenolic compounds, proteins, fats, carbohydrates, acids, minerals, vitamins. This plant is used the production of beverages, juices, jams, and syrup in food industry [1]. *Hibiscus sabdariffa* L. is very popular as herbal tea, recently and it is too consumed. Recent studies related to this plant have focused on its antioxidant, antimicrobial, anti-inflammatory, anti-adipogenic, immunomodulatory, hepatoprotective, anticancer, cardioprotective or diuretic activities [2]. There is not an enough study related to element composition of this plant. Elements that found in different forms in the nature are essential to perform different functions in body and in addition, they are important for cell functions. Elements are important for stabilization of the cellular structures in normal levels. They may stimulate alternate pathways and cause diseases in deficiency states. The objective of this study was to evaluate elements composition of *Hibiscus sabdariffa* L. consumed as beverages and used for various aims in food industry. Flame atomic absorption spectrometry (FAAS) was used to determination elements such as Ca, Cu, Fe, K, Mg, Na and Zn in *Hibiscus sabdariffa* L. Samples were prepared using microwave oven. The obtained results show that this plant has rich element composition.

Keywords: Element composition, *Hibiscus sabdariffa* L., FAAS

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Evaluation of Ulus Historical City Center's Impact on Ankara City Identity within the Framework the Historical Urban Landscape and Protection Approaches

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Abstract

Historical accumulation and experiences of cities are influential in the formation of cities and their spatial fiction. The cities expand around the historical city centers which have overlapping and conflicting areas where old and new structure coexist. Thus, it expresses the urban identity of the society. The open and green spaces within the city that provide many functions such as meeting, socializing and recreational are also directly related to the society values, perceptions and urban identity in terms of witnessing to those living throughout history. In recent years, because of the rapid loss of identity both in our country cities and in other country cities, importance of international historical urban landscape and conservation approaches has increased. The purpose of this paper is to examine the contribution of the Ulus historical city center, which has an important place in urban memory at every period for the city of Ankara, to the urban identity by investigating the international regulations and conventions for the protection and management of cultural heritage taking into account sustainable development and protection-utilization balance. In this context, firstly the international regulations and conventions prepared until today were examined in chronological order. In the second phase of the study, architectural structures and open and green areas were identified which are located in the Ulus historical city center. As a result it was discussed on the necessity of ensuring integrated and sustainable protection in order to enhance the contribution of these cultural landscape elements to urban identity through protection and development of historical and cultural elements. This study has the importance in terms of emphasizing that the necessity of the objectives of conservation, management and planning of historical urban areas within the framework of the mentioned international regulations and conventions to integrate with urban planning regarding continuity of urban identity and contribution to world heritage.

Keywords: City Identity, Historical Urban Landscape, Ulus, Ankara.

Natural Products used for Disinfection of Hatching Eggs

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Abstract

Performance of broiler and layer breeders has increased by new applied methods on incubation, feeding and breeding technologies and genetic selection. Hatching activities become more important for getting maximum benefit from these parent stocks, which are almost all of them imported. One of the factors which contributed to achieving this goal is to apply the proper disinfection program with effective disinfectant. Various infectious organisms are colonized on eggs before and after laying. The number of bacteria on egg shells are changing between 300 and 500 unit at laying, but it can be increased quickly by 20,000 to 30,000 unit within one hour after oviposition. It was detected that the resident microbial flora of eggshell was created by spoiling bacterias (*Aeromonas*, *Enterobacter*, *Proteus*, *Pseudomonas*) and pathogenic bacteria (*Salmonella Enteritidis*). Eggs must be disinfected before being placed in incubator to reduce negative effects of bacterial contamination on hatching performance. Formaldehyde, oxidized water, quaternary ammonium compounds, sodium hydroxide, phenols, flumisol antibiotics, hydrogen peroxide, timsan and polyhexamethylenebiguani hydrochloride containing chemicals are used at disinfection of hatching eggs. Most disinfectants has been demonstrated to be helpful in the control of *Salmonella spp* and other microorganisms without affecting the embryo development. However, many chemicals(such as formaldehyde and polyhexamethylenebiguani hydrochloride PHMB) are not recommended for use in existing applications because of their harmful effects .Human health, environmental concerns and consumer demands for food without residue are in the line with evaluation of alternative control (disinfection) methods that includes lower risk. In recent years researchs aimed at identifying alternative natural products are increased; to control microbial contamination and to reduce dependence on synthetic pesticides or to eliminate them completely. In this study, the results of studies on natural products as an alternative for chemicals at disinfection of hatching eggs has been summarized.

Keywords: Hatching egg, disinfection, natural products, alternative methods

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Deve Sütünden Üretilen Ayranın Kalite Özelliklerinin Belirlenmesi

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Özet

Bilindiği üzere deve, sadece et kaynağı olarak değil süt kaynağı olarak da ekonomik önemdeki hayvan türleri arasındadır. Nitekim dünya çapındaki deve sütü üretimi son 50 yıllık süreçte yaklaşık dört kat artarak yıllık 2.8 milyon ton düzeyine ulaşmıştır. C vitamini, kalsiyum ve potasyum mineralleri bakımından iyi bir besin kaynağı olmasına ilave olarak, sığır sütünde bulunan diğer tüm temel besin maddeleri deve sütünde de mevcuttur. Yapısında bulunan yağ kürecikleri daha küçük boyutta olduklarından dolayı, deve sütünün krema yoğunluğu sığır sütününkinden daha düşüktür. Ayrıca deve sütü yağının erime noktası sığır, koyun, keçi ve manda sütü yağlarınınkine kıyasla daha yüksektir. Deve sütü aynı zamanda birçok hastalığın tedavisinde de kullanılabilme potansiyeline sahiptir. Deve sütünde β -laktoglobulin bulunmaz ve gıda kaynaklı alerjilerin tedavisinde kullanılabilir. Bu çalışmada; deve sütünden ayran üretilmiş ve fermantasyon sürecindeki değişimler incelenmiştir. Bu amaçla, deve sütü deri bir tulumla ve ağaçtan yapılmış bir kaba konulduktan sonra, tulum bağlanmış ve kapatılmıştır. 24 saat süre ile fermantasyona bırakıldıktan sonra elde edilen ayran örneklerinin depolama süreci boyunca fiziksel, kimyasal, mikrobiyolojik ve duyusal özellikleri analiz edilmiştir. Sonuç olarak; deve sütünden üretilen ayran örneklerinin kontrol grubu ayran örneklerine göre kıyaslanabilir özelliklere sahip olduğu anlaşılmıştır. Elde edilen sonuçlar bize; özellikle diğer çiftlik hayvanlarının başarılı olarak yetiştirilemediği bölgelerde, deve sütünün hayvansal kaynaklı önemli bir gıda hammaddesi olarak değerlendirilebileceğini göstermiştir.

Anahtar kelimeler: Deve sütü, ayran, süt bileşenleri, fiziksel, kimyasal, mikrobiyolojik ve duyusal özellikler

Updating the Situation of Remnant Forests in Central Anatolia, Raising Public Awareness for Protection and Establishing Conservation Proposals

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Abstract

Central Anatolia consists of mainly steppes as a result of deforestation by human activity through ages. Forests are remained as islands in high altitudes far from human settlements. Since there have been no work on these forests -*remnant forests*- after the study of Uslu (1959), the current situation of them is unknown. Our study aims to investigate the current situation and threats on remnant forests in Ankara, Kırıkkale, Konya, Kırşehir and Çankırı by field survey, observation, measurements and interviews with local parties, and to establish public awareness and conservation proposals for these forests. Firstly, for collecting literature and field survey data two multidisciplinary (forestry, sociology, botanics, ecology) data forms – Ecological Information Data Form and Information on Forest Uses Data Form- were created. These forms will be improved and updated after some field surveys in terms of their effectiveness to evaluate remnant forests. Project target area which consist of 5 provinces with a total surface area of 87055 km² was screened *via* Google Eartsatellite view and over 250 candidate remnant forest islands were determined. A preliminary database has been established by reviewing satellite views, literature survey and existing information on known remnant forests. Current administrative, geographical, ecological information and forest management plans data are being input into this database. Areas which can not be characterized and prioritized by satellite views are being explored by visits. Candidate forests prioritized by satellite views of Ankara and Kırıkkale were confirmed by field visits. Detailed field surveys and public awareness studies will start in spring for priority areas. As a result, the situation of these forests in Cental Anatolia will be determined, their recognition as remnant forest will be evaluated and updated, and conservation proposals will be developed. This study is supported by Global Environment Facility Small Grants Programme (GEF SGP) Turkey.

Keywords: Remnant Forest Inventory, Central Anatolia, Forest Conservation, Public Awareness.

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A Novel Approach for Non-Thermal Concentration of Fruit Juices: Osmotic Distillation

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Abstract

Concentration process is one of the major unit operations in industrial fruit juice processing, where the soluble solid content (SSC) is increased up to 60-70 °Brix. Industrially, this process is usually performed by multi-stage falling film evaporators, which utilizes much more drastic temperature and time regimes than the pasteurization process. Therefore, apart from high energy consumption, traditional evaporation process has many heat induced drawbacks including alteration of sensory attributes (i.e. color and aroma), reduction of nutritional value (i.e. vitamins and antioxidants) and formation of unfavorable compounds (i.e. hydroxymethyl furfural and furan). Osmotic distillation (OD), the so called osmotic evaporation, is a novel membrane process that can be used for dewatering aqueous solutions by a hypertonic solution flowing downstream a microporous hydrophobic membrane. In a sense, OD is a sort of a non-thermal membrane distillation variant, enabling concentration of fruit juices at atmospheric pressure and room temperature. The driving force of the process is given by a water vapor pressure gradient across the membrane, causing water vapor transfer across the pores from high vapor pressure side to the low one. Since the driving force is not a hydraulic pressure difference, very high concentrations compared to reverse osmosis, up to 60-65 °Brix can be achieved by OD process. This presentation will cover the theoretical aspects involving water transport mechanism, process features, challenges for industrial implementation and current advances in OD. The potential of OD for maintaining quality of freshly-squeezed juices were demonstrated in a case

Keywords: Fruit Juices, Osmotic Distillation, Non-Thermal Concentration

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Determination of Genetic Polymorphisms of Leptin, Ghreline and Insulin Like Growth Factor-1 (Igf-1) Genes in Beef Cattle Raised in Turkey

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Abstract

This study was performed to determine polymorphisms in leptin, ghrelin and insulin like growth factor-1 (IGF-1) genes and to identify genotype and alleles frequencies in beef cattles raised in Sanliurfa province of Turkey. A total of 450 male beef cattles raised in Harranova Livestock and Agricultural Enterprise in Şanlıurfa and selected by phenotypic evaluation, were included in to the study. The animal material consisted of 112 Hereford, 145 Angus, 54 Charolais, 36 Black Hereford, 24 Brahman and 34 Limousin cattles. After DNA isolation from meat samples, leptin, ghrelin and insulin like growth factor-1 (IGF-1) gene polymorphisms were determined by using PCR-RFLP method. All three possible genotypes of BB, AB and AA were observed in IGF-1/*SnaBI* gene AB and AA having the highest and the lowest frequency respectively. The frequency of B allele (0,600) was higher than that of A allele (0,400). With respect to *PstI* polymorphism at the leptin gene, three possible genotypes were also observed. In this locus; genotypes having the highest and the lowest frequency were CT and TT respectively and the frequency of C allele was 0,571 while frequency of T was 0,429. At the *Bfal* polymorphic site of Ghrelin gene in AA and AG genotypes were observed while GG genotype was not observed. Accordingly, the frequency of the A allele was found to be high (0,938) and the frequency of the G allele was found to be quite low (0,062). As a result, it was determined that the examined beef cattle herds were in the Hardy-Weinberg equilibrium in terms for IGF-1 / *SnaBI* and Ghrelin / *Bfal* polymorphisms and not for Leptin / *PstI* polymorphism.

Keywords: Genetic Polymorphisms, Beef Cattle, Ghreline and Insulin

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Identification and Characterisation of Tomato *Fusarium* Wilt Pathogens in Tomato Grown Greenhouses at Antalya

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Abstract

Turkey is one of the most important tomato producer countries all over the world. Turkey has produced nearly 12 million tones tomato since 2014 replacing it in the fourth placed among countries. Antalya province is a center of winter tomato production and is able provide more than 60% of winter tomato production solely. Winter grown tomatoes in greenhouses are threatened *Fusarium* wilt for a couples of decades. To control such fungal diseases resistant tomato cultivars have been using with soil solarisation. The resistance is broken up within resistant tomato cultivars allowing severe diseases in tomato grown greenhouses. This project aimed to obtain *Fusarium* pathogens from tomato grown greenhouses in Antalya province and to identify these *Fusarium* genotypes using morphologic, microscopic and molecular analyses. Total 17 *Fusarium* isolates were maintained on Potato Dextrose Agar (PDA), they were stoked at -86 °C deep freezer. The 17 *Fusarium* isolates were characterised as *Fusarium oxysporum* fsp. *lycopersici* (FOL) and *Fusarium oxysporum* fsp. *radicis-lycopersici* (FORL). All isolates of FOL and FORL were further tested with susceptible Hazera5656 and resistant Tayfur tomato cultivars revealing the most virulent and avirulent *Fusarium* wilt isolates. The results of pathogenicity tests will be able to use in future studies in order to find new resistant tomatoes.

Keywords: Tomato, Greenhouses, *Fusarium* Wilt Pathogens

Response surface methodology for construction of polyrhodanine based amperometric biosensor

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Abstract

The immobilization of biomolecules has become an important component in the development of biosensors. The usage of polymers in the production of biosensors brings the advantages of minimizing the access of interfering compounds to the sensor surface and preventing biofouling. Conducting polymers have been widely used in the areas of bioanalytical science due to their inherent charge transport properties and biocompatibility. The aim of this study is to design the polyrhodanine (pRh) coated Pt electrode via cyclic voltammetry technique and to create a glucose-sensitive biosensor by immobilizing glucose oxidase on polyrhodanine coated Pt electrode. The effect of parameters which influence the measured current values by enzyme electrode in presence of glucose solution will be studied. For this purpose, the effect on current value of several parameters such as to be primarily glucose concentration, monomer (rhodanine) concentration, scan rate, GOD concentration and chitosan concentration will be optimized by Response Surface Methodology (RSM). Table 1 gives the parameters with their low and high values applied to RSM.

Table 1. The parameters with their low and high values applied to RSM for Box-Behnken design.

Parameter	Scan Rate (mV/s)	CRh (mM)	CChi (%)	CGOD (mg/ml)	CGlu (mM)
Low value	25	5	0.25	1	0,1
High value	100	20	1.00	5	2.0

When low and high values were applied, 31 of working set depending on 5 parameters were formed by the Design Expert program. Current values or 31 working sets were measured chronoamperometrically and were evaluated by the program. Current value depending on searching parameters is best fitted to two factorial (2FI) model ($p=0.0004$). According to ANOVA analysis, the most efficient parameters on current values were glucose and chitosan concentrations.

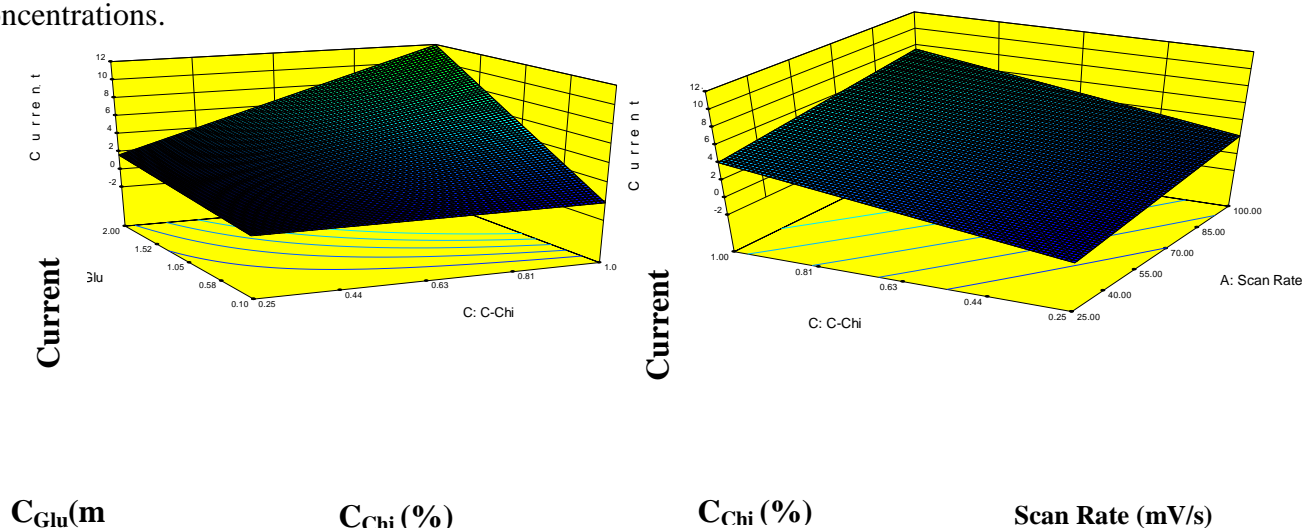


Figure 1. Surface diagram for current value depending on glucose-chitosan concentrations (left) and chitosan

Concentration-scan rate (right) Current values depending on glucose concentration which were measured using optimal conditions we linear upto 25 mM glucose. Glucose level of homemade wine, commercial wine, honey, orange, mandarin, pear, apple, soda, juice and cold teadetermined by enzyme electrode as 1.55 mM, 2,37 mM, 810.28 mM, 93.47 mM, 111.20 mM, 49.06 mM, 149.80 mM, 150.36 mM, 51.35 mM, 36.82 mM respectively. The glucose levels of the samples were determined by also with commercial glucose kit as 1,39 mM for homemade wine, as 2,63 mM for commercial wine, as 821,17 mM for honey, as 91,24 mM for orange, as 108,03 mM for mandarin, as 49,64 mM for pear, as 150,36 mM for apple, as 148,18 mM for soda, as 53,28 mM for juice and as 36,50 mM for cold tea. As a conclusion, constructed electrodes can be used for glucose determination succesfully.

Keywords: Biosensor, rhodanine, polyrhodanine, glucose

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Evaluation of The Effects of Starch Gelation on The Characteristics of Turkish Delight

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Abstract

Turkish Delight (lokum) is a confectionery form which consist of starch, sugar, sitric acid and water as main ingredients. It is a candy-based like jelly confection which contains gel-forming starch. In the food industry, starch is used as a thickening, stabilizer or gelling agent. Starch gelatinization acts a major role to provide textural characteristics in lokum production. As the starch ratio in Turkish delight increases, capacity of the water holding increases. The major components of starch are amylose and amylopectin, which are polysaccharide. When starch granules are gelatinised some structural and rheological changes occur. The swollen granules form a mixed system which free amylose and fragments dispersed in a continuous amylose-water phase. It is aimed to provide the desired texture in lokum with starch-water-sugar-acid interaction during lokum production process. Textural properties were analysed by TPA (texture profile analysis) and correlated with sensorial attributes.

Keywords: Turkish Delight, Starch Gelation

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The Effect of Storage Temperatures and Packaging Materials on Lipid Changes of Diced Hazelnut

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Abstract

The purpose of this study was to investigate the effects of 2 packing materials (polyethylene terephthalate/aluminium/polyethylene (AL) and polyethylene/polyamide/polyethylene (PE)) and 3 storage temperatures (20, 28, and 37 °C) on the quality attributes of diced hazelnuts as a function of storage time. Moisture, free fatty acidity, peroxide, fatty acid distribution, α - and γ -tocopherol, oxidative stability, L*, a* b* and sensory evaluation analyses were carried out during 1 year of storage in hazelnut samples supplied from the Ordu region, Turkey. The sample was a mixture of hazelnut varieties processed by the Turkish hazelnut industry. Results indicated the shelf life of the samples from shortest to longest was as follows: stored at 37 °C and packed in PE < stored at 37 °C and packed in AL \leq stored at 28 °C and packed in PE < stored at 28 °C and packed in AL \leq stored at 20 °C and packed in PE < stored at 20 °C and packed in AL.

Keywords: Hazelnut, Storage Temperatures, Packaging Materials



Predicting Deformation of Nanocomposites in the Tension Strength Using Data Mining

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Abstract

Nanotechnology is a very popular subject in the scientific World. Investments that many countries have made scientifically and economically demonstrate the importance of nanotechnology. The mechanical properties of nanocomposites give important information on the application areas of the product. Traditional tests to determine mechanical properties, is quite expensive and long. Data mining techniques offer economic solutions to these problems. In this study, the effectiveness of deep learning and artificial neural networks algorithms was compared to estimate the deformation of nanocomposites obtained using different lignocellulosic materials and nanoparticles. Models in RapidMiner program was used to estimate the tensile strength of test samples. More accurate estimates have been obtained with the deep learning algorithms.

Keywords: Nanotechnology, Nanocomposite, Data Mining, Predicting

Identification and Detection of *Xanthomonas axonopodis* pv. *manihotis* causing bacterial blight disease of cassava (*Manihot esculenta*) by Real-time PCR

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Abstract

Cassava (*Manihot esculenta* Crantz) is the natural host of the nonpigmented *Xanthomonas axonopodis* pv. *manihotis* (*Xam*) causing cassava bacterial blight (CBB) disease. Cassava plants showing blighted disease symptoms suspected to be caused by *Xam* were collected from eight Agro-ecological zones of Ghana in 2014 cropping season. The symptoms exhibited by the infected plants included water-soaked angular leaf spots, blighted leaves, wilting, defoliation, bacterial exudates, and dieback. The pathogen was isolated by using *Xam* semi-selective medium, Cefazolin trehalose agar (CTA), and the pathogenicity test carried out on the Esam cassava variety. The colony morphology was examined on the CTA media and molecular identification was carried out by the Real-time PCR using *Xam* species specific Locked Nucleic Acid (LNA) probe developed in this study. Thirty-four isolates were recovered from the infected samples. The pathogen was confirmed to be present in five regions out of the eight surveyed. Ashanti region recorded the highest CBB prevalence (70%), with the least prevalence in the Greater Accra region (20%). The pathogen growth on the CTA media, showed circular, whitish-gray-creamy colonies. All the putative pathogens were confirmed to be pathogenic and consistently reisolated from the inoculated cassava plants. The designed primers and probe showed a high degree of specificity to only *Xam* isolates, which consistently produced amplification signals in all the reaction. No amplification signal was obtained from the genomic DNA of other *Xanthomonas* species. The Real-Time PCR holds a great potential for quick identification and detection of *Xam*, which is important for the management of this pathogen in Ghana.

Keywords: Cassava, *Xanthomonas axonopodis* pv. *manihotis*, Real-time PCR, Ghana

Sequence differences between *Culex pipiens* complex

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Abstract

Culex pipiens complex mosquitoes are the primary vectors of pathogens of public health significance, as well as many arboviruses. Although these mosquitoes share similar morphology, the *Culex* complex species has unique behavioral and reproductive traits. Such differences are important in order to assess their roles as vectors. It is also crucial to correctly identify these species for vector management. The only morphological differences among the members of the *Culex pipiens* complex exist in the genital structure of males. The absence of morphological differences in females and the presence of hybrids make it quite difficult to identify these taxa. Recently, molecular tools have been developed to differentiate species and forms of the *Culex pipiens* complex. In this study larva samples were collected from various parts of Muğla province using the dipping method during field surveillance activities. DNA isolation from individual samples and PCR amplification of the mtDNA gene *COI* encoding cytochrome *C oxidase subunit I* was performed. PCR products were sequenced and sequence analyses were used to determine the genetic differences between *Culex pipiens pipiens* and *Culex pipiens f. molestus*. The differences in the nucleotide composition of the *COI* gene given in this study will make it possible to choose restriction endonucleases for PCR-RFLP assay and SNP genotyping methods for further studies.

Keywords: *Culex pipiens pipiens*, *Culex pipiens f. molestus*, Cytochrome *C oxidase subunit*, genotyping

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The Effect of Biochar Application of Different Doses on Biochemical Properties of Soil

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Abstract

In this study, the relationship between microbial biomass-C, CO₂- formation and other soil characteristics of biochar and soil was researched. The research was established by following the randomized blocks design in 4 parallels and with 48 pots. In the study, application of Biochar (0, 10, 20, 40 kg da⁻¹) and Nitrogen fertilizer CAN (26%) (0, 20, 40 kg da⁻¹) were applied to a soil with sandy clay loam texture at different doses. The incubation experiment continued for about 3 months in greenhouse conditions and soil samples were taken on days 24, 48, 72 and 96. As a result of the soil analysis, it was determined that the amount of CO₂ - formation, microbial biomass - C and organic matter increased with respect to control and periods.

Keywords: Biochar, CO₂ - Production, Microbial biomass – C

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The Place and Priority of Research and Development Expenditures for Sustainable Competitiveness in the Agriculture Sector

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Abstract

The importance of the agricultural sector, which plays an important role in the development of countries and societies, is increasingly influenced by the globalizing economic system, increasingly competitive environments and rapidly changing market conditions. Agriculture; It is an indispensable sector all over the world because it can sustain the life of the country's population, contribute to national income and employment, supply raw materials and capital to other sectors, directly and indirectly influence exports, and contribute to biodiversity and ecological balance. For this reason, the agricultural sector is closely related to the economic, social and environmental dimensions of society as a whole. Due to its strategic importance, agriculture is a sector supported by an agrarian policy specific to its economic structure in each country. The main objective of the policies implemented in the agricultural sector is to create an organized, competitive and sustainable agricultural sector. In the agricultural sector where competition is so intense, traditional production systems have left their place to new generation systems based on knowledge-intensive, R & D and innovation. According to this, in the agricultural sector companies and countries need to keep up with technological change by allocating more resources to their research and development expenditures so that they can gain sustainable competitive advantage. The issue of working in this context is the role of spending on research and development, which is the main element in increasing the sustainable competitive power in agriculture. The aim of the study is to examine the role of Turkey in the fields of investment, education, research and development activities (R & D), patents, foreign direct investment and information and communication technologies in the fields of agriculture sector, which are the main elements of increasing the sustainable competitive power with economic growth rate, will be reviewed.

Keywords: Globalization, Agriculture sector, Sustainable competitiveness, Economic growth, Research and development expenditures.

Determination of Heavy Metal Content of Apricots Grown on the Roadside of Different Modes of Transportation in Malatya

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Abstract

Agricultural production areas are under numerous restricting risk factors. The most important factors of those are urbanization which gains significance with increasing world population and consequently increasing transportation facilities. Transportation facilities constitute great risk on production of healthy agricultural products especially because of it's being heavy metal contamination source. For that reason, a study was conducted in order to evaluate the effects of different means of transportation on apricot fruit, leaf, kernel and cultivated soil. Accordingly fruit, leaf, kernel and soil samples were collected from three different apricot orchards located near railroad, motorway and airport in the area 20 meters far from contamination source. Cd, Pb and Ni contents were detected by ICP/OES in the collected samples. Highest contents of Cd, Pb, and Ni in soil, fruit and kernel samples were found in the samples collected from railway side. These contents of soil, fruit and kernel samples were 0,017, 4,446, 9,990 mg/kg for Cd, 1,204, 3,266, 8,597 mg/kg for Pb and 1,173, 1,066, 4,323 mg/kg for Ni, respectively. Highest Cd, Pb and Ni contents (15,714, 14,292, 7,449 mg/kg) of leaf sample were obtained in the samples collected motorway side. All fruit samples contained higher amounts of Cd and Pb compared to permissible limits (0.05 mg/kg and 0.1 mg/kg) of FAO/WHO. According to recommended limits of Ni for foods (10 mg/kg) proposed by SEPA, our results were within the safe limits.

Keywords: Heavy metal, Roadside, Modes of transportation, Apricot

Weed Control Methods in Cotton Fields of Diyarbakır

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Abstract

It is known to cause economic losses arising from mistake herbicide application in cotton production, which is the locomotive sector of Diyarbakır. Survey was conducted over 80 cotton farmers in 2016 to evaluate the weed problems in cotton fields in Diyarbakır. The questionnaire included 16 questions about weeds, herbicides, tillage and crop rotation. The research showed that the most common weeds in cotton production fields were 51% cocklebur (*Xanthium strumarium* L.), 22% nightshade (*Solanum nigrum* L.), 8% groundcherry (*Physalis* spp.), 5% pigweed (*Amaranthus retroflexus* L.), 5% johnsongrass [*Sorghum halepense* (L.) Pers.], 3% bermudagrass (*Cynodon dactylon*), 3% jimsonweed (*Datura stramonium* L.), 1% purslane (*Portulaca oleraceae* L.), 1% dyer's croton [*Chrozophora tinctoria* (L.) Rafin] and 1% sedge (*Cyperus rotundus* L.). Growers stated that they used glyphosate as a total herbicide (100%) to control of emerged weeds. Growers used pre-plant herbicide pendimethalin (55%), fluometuron (33%), benfluralin (5%) trifluralin (2%), metholachlor-S+benoxacor (1%) and pre-emergence herbicide fluometuron (6%) to control broadleaf. It was detected that growers (88%) preferred herbicides to control grass (clethodim 36% haloxyfop methylester, 25% quizalofop p-ethyl, 22% tepraloxymid, 8% cycloxydim 6% fluazifop p-butyl, 3% I propaquizafop) and 12% did not use herbicide. Growers reported that it was effective price (53%), weeds (19%), rain and irrigation (6%) and crop rotation (12%) in herbicide choice. Grower stated that tillage system used two (%78), three (24%) and one (3%). Since the rhizomes and grass are not controllable by hoeing, such as johnsongrass and bermudagrass, the hoeing is made for broadleaf. The preceding crop of cotton were cotton (58%), maize (30%) and wheat (12%). This study suggests that it is important to investigate weed control methods in cotton fields and to develop post-emergence control methods instead of the pre-plant herbicide.

Keywords: Diyarbakır, Cotton, Weeds, Herbicides



Investigation of Some Properties of Local Turnip (*Brassica rapa* var. *rapa* L.) Genotype Cultivated in Malatya (Arapkir)

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Abstract

Having varied characters ecological regions and its being located in climatologically convenient area, Turkey is an important country in terms of plant diversity. Additionally, the country has another importance that it is one of the few places where plants have been cultivated. For those reasons, there are many unique local varieties in Turkey. However, prevalence of new varieties, developments in cultivation techniques and commercialization rate in agriculture restricted local variety production areas and caused decrease of local genotypes in time. Nevertheless, genotypes showing substantial genetic differences are still cultivated in regions where cultivation areas are limited and modern agriculture is not possible. In this study which was conducted for the aim of characterization and protection of these local varieties, a turnip genotype has been cultivated from of old in Arapkir county of Malatya Province was compared with a standard turnip variety, Şalga, in terms of some specifications. Study was performed in a farmer orchard in Arapkir. Local turnip variety cultivated in the area was compared with Şalga in the aspects of root weight, root diameter, root height, total soluble solid and root mineral content. There were no any significant differences found in terms of root weight, root diameter, root height and total soluble solid. On the other hand, statistically significant differences were found in N, P, K, Ca, Mg, Cu, Mn, Zn, B and S contents. While local genotype was found to have richer contents of N, P, K, Ca, Mg, Cu, Mn, Zn, B and S; Şalga was more important about Na and Fe contents.

Keywords: Turnip, Arapkir, mineral content, local genotype



Determining of Bio-ethanol Production Potential of different Sweet Sorghum Genotypes in Mediterranean Condition

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Abstract

Decreasing the availability of fossil energy sources in the world demand that an alternative and renewable source of energy is to be found. Sweet sorghum (*Sorghum bicolor* (L.) Moench) is a strong candidate for a cheap and renewable source of energy. The objective of this proposal is to evaluate the potential of sweet sorghum as a source of biofuel production. The experiment were conducted in south of Turkey at the Eastern Mediterranean Agricultural Research Institute (Adana, 36°51' 35" K and 35° 20' 43" D) during the second crop season in 2015. Forty nine sweet sorghum genotypes obtained from various sources were used as material and each genotype were sown in one row of 4 m long and 0.7 m apart in May 28th according to randomized complete block design with four replications. In terms of genotypes, flowering, plant height, stalk yield, biomass, dry matter, juice yield, brix, şugur yield and theoretical ethanol value were ranged from 60.3-105.3 day, 116.2-418.6 cm, 4.64-29.7 t ha⁻¹, 8.60 -35.40 t ha⁻¹, 1.33-7.95 t ha⁻¹, 16275-121125 l/ha, 9.60-16.50%, 1.931-13.93, and 1028-7414 l ha⁻¹ respectively. As a result of the research, 21 genotypes in the Çukurova region under the 2 nd product conditions had higher potential than the other genotypes, especially in terms of biomass and theoretical ethanol yield, and they will be a resource for future studies.

Keywords: Bio-ethanol biomass, brix value, sweet sorghum, sugar, yield

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Molecular Detection of *Aphelenchoides besseyi* from Rice Tissues

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Abstract

Rice is one of the most important human food crops in the world. Rice white tip nematode, *Aphelenchoides besseyi*, cause serious losses in rice. *A. besseyi* is a seed borne nematode and therefore important in terms of quarantine. In the present study, species-specific primers from the small subunit ribosomal DNA region of the *Aphelenchoides* genus were developed to identify *A. besseyi*. The primers were validated on DNAs isolated from juveniles and directly infected tissues. *A. besseyi* was successfully detected from plant tissues without nematode extraction. As known, the extraction of rice white tip nematode from plant tissues is time-consuming. Therefore, this molecular detection method would allow rapid and accurate identification of the nematode.

Keywords: Molecular detection, rDNA, Rice white tip nematode



Murat Nehri Havzası Rehabilitasyon Projesi Kapsamında Projelendirilen Çapakçur Mikrohavzası'nda, Mikrohavza Ölçekli Peyzaj Değerlerdirmesi

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Özet

Günümüzde doğal ve kültürel kaynaklar hızla tükenmekte ancak buna karşılık etkili olabilecek koruma yaklaşımları sergilenememektedir. Mevcut kaynaklar da yanlış alan kullanımları ve yoğun kullanımlar neticesinde yok olma tehlikesi ile karşı karşıya kalmaktadır. Doğru ve etkili kaynak yönetimi ve plan kararlarının alınabilmesi için, ekolojik yapıyı korumayı hedef alan optimal alan kullanımlarının hassa bir şekilde belirlenmesi gerekmektedir. Mikrohavza planlamasına yardımcı olması açısından alandaki mevcut sorunlar ve alanın sahip olduğu doğal ve kültürel olanaklar alanında uzman kişiler ve mikrohavza sakinlerinin görüşleri doğrultusunda belirlenmiş olup, önerilen çözümler yine aynı kişiler tarafından belirlenmiştir. Bu şekilde tamamlanan Sor-Sap-Çöz analizlerine göre alanın en belirgin sorunları; rekreasyon imkanlarının varlığına rağmen planlamaların olmadığı, sulama yapılarının yetersizliği ve bakımsızlığı, yayla yollarının kullanılamaz halde oluşu, arıcılık faaliyetlerinin yetersizliği tarımsal faaliyetlerin yetersizliği, heyelan ve erozyon yapılarının eksikliği nedeniyle yaşanan toprak kayıpları ve yeterli doğal kaynaklara sahip olunmasına rağmen (rüzgar, güneş, su) yenilenebilir enerji kaynaklarının azlığı olarak belirlenmiştir. Doğal kaynakların bilinçsiz kullanımı ve orman tahribatının çokluğu da mikrohavzanın sürdürülebilir kullanımı açısından büyük tehdit oluşturmaktadır. Bu çalışmada; Bingöl ili Çapakçur Mikrohavzası sahip olduğu doğal ve kültürel kaynakları ile tarım ve rekreasyonel açıdan önemli bir potansiyelleri araştırılmıştır. Bu kaynakların belirlenerek mikrohavzanın bu veriler doğrultusunda planlanması, doğallığın korunması ve sürdürülebilirliğin sağlanması açısından çok önemlidir.

Anahtar Kelimeler: Çapakçur Mikrohavzası, Peyzaj Değerleri, CBS ve uzaktan algılama, Senaryo analizi



An Overview to Modern Lumber Fabrication

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Abstract

Log is a relatively difficult material to process due to shape and weight. Its value of economic and ecologic required to be sensitive while processing. Also trade and supply problems with several reasons effect log circulation of sawmills. Therefore many sawmills invest to transportation, automation, scanning and computer etc. systems to improve their capacity and yield. In this study the investments and improvements of sawmills were investigated. Investigations showed that the improvements strongly related to sawmill type and its economic potential. It can be said that technological developments directly but slowly effect lumber manufacturing due to high raw material (log) prices, supply difficulties and also low profit margins of lumber.

Keywords: Lumber Manufacturing, Log Processing, Non-destructive Imaging, Sawing.



The Determination of Agricultural Characteristics of Some Chickpea (*Cicer arietinum* (L.)) Varieties Grown in Amik Plain

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Abstract

This study was conducted in Amik plain, Turkey in 2011-2012 and 2012-2013 growing seasons to determine some morphological and agricultural characteristics of 13 chickpea varieties and one local population. The experiment was laid out in a randomized complete block design with three replications. According to the results generated by combining data of two years, the highest plant height (66,2 cm) and the highest harvest index (45,1%) were obtained from the variety Menemen-92; the highest first pod height (39,1 cm) from the variety Diyar-95; the highest hundred grain weight (51,4 g) and the highest grain yield (399,9 kg/da) from the variety Küsmen-99. Also, Karahonut, a local population, had the highest number of main branch per plant (6,0), the highest grain number per plant (141,5) and the highest number of pod per plant (144,6). Furthermore, it was determined from the correlation analysis that there were both positive and negative correlations between some characteristics. Considering the grain yield per unit area, the variety Küsmen-99 can be recommended to the chickpea growers in Amik plain, Turkey.

Keywords: Chickpea, Adaptation, Yield, Amik, Hatay



The Performance Assessment in Irrigation Systems: The Case of Turkey

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Abstract

Water is an essential resource for human's live maintaining. Alongside it supplies people with daily needs, water is used for the purpose of agriculture, energy production, industry and tourism. The increase of population and industrialisation have caused both rise of present water consumption and contamination of present water resources. For this reason, water is among the resources should be used efficiently in the world. Water used in agriculture is considerably more than the other sectors use. Comparing with the developed and European countries, water percentage used in agriculture in Turkey is much more. It is known that water resources decreased and would decrease even more due to population increase, climate changes and unconscious uses. It is known that due to population increase, climate changes and unconscious uses, water resources decreased and will decrease even more. While Turkey is not among the countries suffered from water shortages, present water resources should be carefully used due to rapid population growth, pollution and the average annual precipitation lower than the world average and should be immediately taken the necessary precautions against contamination. Therefore, especially in agriculture, water must be used economical, conscious and in a planned way. Regarding this issue, one of the applications should be performed is performance assessments of irrigation. Studies about performance assessments of irrigation are carried out by the Irrigation Association to determine and take necessary measures the inabilities and problems on irrigation by evaluating of the present water potential in any area. In this review, performance assessments of irrigation studies carried out by Irrigation Associations were summarised.

Keywords: Assessment criteria, irrigation, irrigation associations, performance assessment, water resources



Prediction of drying kinetics of sun drying of osmotically dehydrated and fresh figs using Artificial Neural Network (ANN) method

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Abstract

In this study, drying kinetics of pretreated and non-pretreated figs was mathematically modeled using Artificial Neural Network (ANN) method. In experiments, Sarılop variety figs (*Ficus carica* L) were used as a whole (unsliced and unpeeled). Pretreatment was osmotic dehydration (OD). Before drying process, figs were immersed completely in a sucrose solution at 50 °Brix and 50 °C with a solution/fruit mass ratio of 4/1. OD was applied at 130 mbar for 15 min and then was continued at atmospheric pressure for 165 min thus, the pretreatment period took 180 min. Non-pretreated (fresh) and pretreated figs were dried at open-air sun. During the drying, solar radiation, air velocity, humidity of air, temperature of air and weights of samples were measured. Moisture ratio of pretreated and non-pretreated figs was compared and also mathematically modeled. In ANN method, there were five inputs: drying time, solar radiation, air velocity, humidity of air, temperature of air and one output: moisture ratio. ANN predictions of the moisture ratio were analyzed by using MATLAB 7.9.0 software. Result show that osmotic dehydration shortened the drying time of figs. Also, the predictions of ANN model was compared with experimental data and it was found that values of root mean square error (RMSE), reduced chi-square (γ^2) and correlation coefficient (R^2) were 0.0030, 1.01E-05 and 0.9999, respectively for pretreated figs and 0.0026, 7.45E-06 and 0.9999, respectively for non-pretreated figs.

Keywords: Fig, drying, moisture ratio, Artificial Neural Network, osmotic dehydration



Determination of Caffeine Amount and Colour Values of Liqueurs Produced Using Different Tea Concentrations and Extraction Times

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Abstract

Liqueurs are alcoholic beverages derived from distilled spirit that have been flavored some flavors such as fruits, herbs, spices, nuts, chocolate and bottled with added sugar or sweetener. Three different tea concentrations (2.5, 5 and 7.5%) and two different extraction durations (15 and 30 days) were used in liqueur production in this study. Caffeine, (mg/L), total phenolic compounds quantity (mg gallic acid equivalent (GAE)/L) and Hunter colour values (L^* , a^* , b^*) were determined. The highest amount of caffeine was determined as 1191,35 mg/L in the liqueurs produced using 7,5% tea concentration and 15 days of extraction time. Increased tea concentration enhanced the amount of caffeine in liqueurs. The extension of extraction time didn't cause significantly change in the amount of caffeine content of tea liquors. The highest quantity of total phenolic compounds was determined as 4796,186 mg/L in the liqueurs produced using 7,5% tea concentration and 15 days of extraction time. Increased tea concentration enhanced the amount of total phenolics in liqueurs similar to caffeine. On the other hand, the extension of the extraction time decreased the quantity of total phenolic compounds. L^* , a^* , b^* values of tea liquors ranged from (2,48 to 4,85), (12,17 to 13,71), (4,28 to 8,34), respectively.

Keywords: Liqueur, tea, caffeine, total phenolic compound, colour values



Investigation of Antibiotic Susceptibilities and Some Serotype Profiles of Avian Pathogenic Escherichia Coli Isolates in Turkey

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Abstract

In this study, the isolation of Escherichia coli from chickens with colibacillosis, the detection of the presence of important serotypes (O1, O2, O18, O78), the examination of antibiotic susceptibility profiles and resistance genes in antibiotic resistant isolates were aimed. The 150 E. coli isolate obtained from internal organs of chickens with colibacillosis was the material of this study. Antibiotic resistance status of these isolates to 12 antimicrobial agents that belongs to seven antimicrobial families was examined by disk diffusion method. The most important twenty-three resistance genes in antibiotic-resistant isolates and important APEC serotypes were investigated with polymerase chain reaction (PCR). While the 6.7% of the isolates were susceptible for all antimicrobials, the 66.7% of these were multidrug resistant. It was determined that 150 isolates of E. coli were resistant at a rate of 73.3%, 68.7%, 63.4%, and 60.7% to amoxicillin/ampicillin, tetracycline, enrofloxacin, and trimethoprim/sulfamethoxazole respectively. The bla_{tem}, bla_{cmy}, bla_{shv}, bla_{ctx}, bla_{oxa}, tetA, tetB, qnrA, drfA1, drfA7,17, sulII antibiotic resistance genes were detected. It was determined that 18.0% of isolates were O78, 10.0% were O2, 2.7% were O1, and 2.0% were O18. It is thought that more epidemiological studies should be designed to investigate the virulence properties and clonal groups of APEC.

Keywords: Avian pathogenic E. coli, antibiotic resistance, serotype

Physicochemical and Nutritional Properties of Bitter Melon at Four Maturation Stages

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Abstract

The purpose of the present study was to investigate the physicochemical characteristics of bitter melon fruit at four maturation stages. Results showed that during the maturation period, ascorbic acid, carotene, total phenolic content and antioxidant capacity of the bitter melons were changed between 5.16 ± 0.03 - 7.26 ± 0.03 mg/g dry weight, 78.91 ± 0.86 - 190.28 ± 2.23 μ g/g dry weight, 5.62 ± 0.2 - 8.25 ± 0.1 mg gallic acid equivalent/g dry weight and 653.84 ± 20.53 - 822.81 ± 19.75 mg ascorbic acid equivalent /g dry weight respectively. Moreover, the values of Ca, Cu, Fe, K and Mg ranged between 172.33 ± 7.2 - 196.82 ± 5.1 , 14.33 ± 0.1 - 16.32 ± 0.2 , 11.38 ± 41.8 - 16.58 ± 16.3 , 1670.38 ± 84.4 - 1922.67 ± 95.3 and 106.79 ± 16.0 - 145.41 ± 28.1 mg/100 g dry weight respectively. Results indicated that maturation stages highly affected nutritional and functional value of bitter melon.

Keywords: nutrient; total phenol; antioxidant activity

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Safflower Response to Drift Rates of Imazamox

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Abstract

Safflower is a promising oilseed crop can be cultivated in many regions of Turkey, and the field sowed the crop is getting up day by day in Turkey, especially in Ankara. Emerging safflower plants has run into the time when weed control practices have been implemented using herbicides like ALS-inhibitors (e.g. Imazamox) in adjacent farm and field. Imazamox is a member of Imidazolinones and registered on many crops such as, clearfield sunflower, pea, clover, soybean and bean, cultivated adjoining safflower fields to control weeds. Field experiments were carried out in Ankara in 2014 and 2016 to determinate safflower responses (*Carthamus tinctorius* L. var. Remzibey-05) to drift rates of imazamox. The herbicide at the rate of 6.25, 3.15 and 0.8 g active ingredient (a.i.) ha⁻¹ was applied at a spray volume of 192 L ha⁻¹ to safflower seedlings at 2-4 true leaf stage using a CO₂ pressurised knapsack sprayer. Crop injury and yield reduction caused by the herbicide was determined 30 days after treatment (DAT) and at harvest. Crop injury increased as drift rates of herbicide increased and reached to 63-71% 30 DAT. Yield reduction caused by the lowest drift rate of imazamox was limited, 13-25%, compared with the nontreated while the ratio in parcels applied middle rate of imazamox was 44-63%. Stunting and severe growth reduction on safflower plants were observed at the highest rate of herbicide. Some of plants that exposed to the highest rate of imazamox was alive, but could not produce seed.

Keywords: Imazamox, drift rate, safflower

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Determination of table olive and olive oil consumption and preference of children from Yalova/Turkey

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Abstract

This research was a part of “Olive and Child Project” co-founded by International Olive Council (Madrid/Spain) and Food Agriculture and Livestock Ministry (Turkey) and carried out by Ataturk Horticultural Central Research Institute. This research aimed to determine consumption amount of table olive and choice of olive oil of children from elementary schools of Yalova/Turkey. For this aim 497 questionnaire forms were conducted with parents of children. Results of this study will provide some information about table olive and olive oil consumption of children. That will be useful for policy maker and producer which willing to increase their table olive and olive oil production in Turkey. In this study table olive and olive oil consumption of children were found at low level only 38 % of children consume table olive every day. 60 % of children did not consume olive out of breakfast so that bread, appetizer or bakery products produced with table olive can be use a toll to increase consumption of children. Only 39 % of children like to consume olive oil in foods and 68 % of children never asked to use olive oil in cooking. Sweeter and more delicate olive oils should be produced to increase consumption of children.

Keywords: consumption, table olive, olive oil, prefer, olive oil in cooking

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Prediction of Non-measured Soil Temperature in Depths Using Meteorological Data

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Abstract

Heat diffusivity is an important parameter for prediction of soil temperature. In this study, soil temperatures throughout to 0-50 cm soil depth were predicted with respect to the heat diffusivity coefficient values obtained from the functional relationship using meteorological data. Heat diffusivity values for 5, 10, 20 and 50 cm soil layers were estimated according to mean daily soil temperature values of Bafra Meteorology Station in Samsun between May – July 2012, and heat diffusivity values were estimated for 5, 10, 15, 20, 30, 40 and 50 cm using a parabolic function. Root Mean Square Error (RMSE) between soil temperature values estimated from the meteorological data and the function for 5, 10, 20 and 50 cm soil depths were determined as 0.054, 0.093, 0.099 and 0.012, respectively. As a result, it was found that daily soil temperature changes can be predicted for non-measured soil temperatures in different soil depth using the heat diffusivity values estimated from the parabolic functions.

Keywords: Soil temperature, Heat diffusivity, Prediction, Parabolic function.



Soil Organic Carbon Distribution in a Water Shade

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Abstract

This study was conducted in Çelikli water shade in order to determine the change in soil organic C content at top and below soils. Soil samples were taken from 0-30 and 30-60 cm depths. The greater portion of the study area has low organic carbon content (87%), and the small portion of the study area has high organic C content. Subsoil organic carbon content also was lower in this water shade. Soil organic carbon management is important for sustainable agricultural production in the water shade.

Keywords: Organic carbon, Çelikli water shade, Sustainable agriculture, Tokat

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The Theory Of Constraints And Optimal Product Mix For Systems With Very Constrained Approach To The Determination Of The Effects Of Purchase

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Abstract

Theory of constraints; direct labour costs is regarded as an expense in the period, and the main purpose of the enterprise is to make profit, there is at least one constraint for each product and planning product flow in the chain is difficult. This study is the determination of the product mix in a factory in Konya, furniture, constraints, and identifying strategies for improving the flow and the elimination of these constraints are explored. However, the effects on the reduction of the purchase cost were also investigated. All of the study to the analysis and improving the current situation in the theory of constraints approach and a linear programming model was used. In addition, the differences between traditional accounting and contribution accounting have been investigated in the conduct of the research. As a result of an overall assessment based on the study made suggestions.

Keywords: theory of constraints, the furniture industry, product mix, contribution accounting, linear programming

* The research has been presented at 10. National Symposium at 17.09.2010, but has not been published.

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Determination of Bonding Performance of Newly Developed PVAc Based Adhesives

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Abstract

This study aims to determine the bonding performance of newly developed PVAc based adhesives for wood products and furniture industry. For this purpose, total 4 types of samples were chosen; 3 types of PVAc adhesives, produced with different properties (solids content, filler material, MFFT value) and a control sample of PVAc adhesive which were randomly supplied from the market for comparison. Test samples were prepared from scots pine (*Pinus Sylvestris* L.) and oriental beech (*Fagus Orientalis* L.) woods, which are widely used in wood products and furniture industry. D1 and D2 tests were applied to the prepared samples in accordance with the principles stated in TS 5430 EN 204 and TS EN 205 standards. As a result of the experiments; 4 types of adhesives were found to conform in terms of the adhesion resistance in accordance with the standard values of D1 and D2 class. In respect to the result of the D1 test, the highest value of bonding strength was obtained from oriental beech wood samples, bonded with T3 adhesive (17.16 N/mm²), the lowest value was yielded on scots pine wood samples, bonded with T1 adhesive (11.80 N/mm²). Regarding with the D2 test, the highest value of bonding strength was determined on oriental beech wood samples, bonded with T3 adhesive (16.57 N/mm²), the lowest value was observed in scots pine wood samples, bonded with control adhesive (9.72 N/mm²).

Keywords: Bonding strength, PVAc adhesive, Oriental Beech, Scots pine



The Evaluation Of Irrigation Management Practices of Irrigation Cooperatives In Polatlı District of Ankara

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Abstract

This study has conducted to evaluate the irrigation management belongs irrigation cooperatives which operate in Polatlı District, Ankara Province. Depending up on this purpose; the soil within the territory of irrigation cooperatives has been examined in terms of agricultural irrigation features. In addition, by using surveys; the irrigation methods and management problems of district's farmers are determined and solutions of these problems are presented. In this study, 8 irrigation cooperatives which represent research area were discussed and surveyed with 60 cooperative members and 9 cooperative board members. According to the survey results; while 98 % of cooperative members using the sprinkler irrigation, only 2 % uses drip irrigation. Among the members, 73 % of graduated from primary school, 22 % of from high school and 5 % of from university. 31 % members have thought the irrigation fees are expensive, 67 % members have recommended that the irrigation fees must be calculated based on number of irrigation sprinkler head. 12 % members have expressed to determine the watering time by controlling the soil, 63 % of by looking the situation of the plant and 25 % of by estimation. 25 % surveyed members have evaluated the cooperative management as poor-very poor. 38 % of members are not satisfied from collection of money and 41 % of stated the training about irrigation is poor-very poor. Also, the managers of the cooperative sorts the problems in the cooperative; the lack of interest of the members (40 %) comes first, to complain about electricity dept payments (32 %) comes second order. As a result, the problems of the irrigation cooperatives in the research area have been investigated and submitted solutions and recommendations.

Keywords: Energy, General Assembly, Irrigation, Irrigation Cooperative, Main contract

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Determination of Rural Tourism Areas by Landscape Planning Approach (using SWOT Analysis Method): Case Study of Cumalıkızık

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Abstract

Along with the industrial revolution, the increase in leisure and income levels of people has diversified tourism activities. This diversity has occurred different demand of tourism (history, health, nature walk, culture and rural tourism etc). The rural tourism areas should have both strong cultural and natural landscape characteristics and recreational potential. Countries or regions with this type of tourist supply potential can provide rural development with new tourism policies developed due to tourism demand. Cumalıkızık is one town of Kızık town's (Cumalıkızık, Fidyekızık, Derekızık, Hamamlıkızık ve Değirmenlikızık) in Bursa can be visited in almost four season of the year with natural beauty, climate and topographical feature. It is also one of the rare places to preserve natural and cultural characteristics. In this study the aim is to evaluate the use of SWOT analysis -which is a scientific planning method- in landscape architecture by identifying the internal and external factors, minimize the effects of weaknesses and threats. It is also can take maximum advantage of existing strengths and opportunities, considering internal and external factors in the case of Cumalıkızık, in terms of landscape planning. For this purpose, the socio-economic, cultural and natural features of Cumalıkızık Village have been examined with landscape planning approach. Potential rural tourism opportunities have been determined and evaluated using SWOT Analysis method and some suggestions have been made for the sustainable use of these areas.

Keywords: Rural Tourism, SWOT Analysis, Cumalıkızık, Bursa



Optimization Of Ultrasound-Assisted Extraction Of Phenolic Compounds From Red Pepper Seed By Response Surface Methodology

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Abstract

In this study, phenolic compounds of Kahramanmaraş red pepper seeds which are waste products from red pepper processing line were extracted by ultrasound-assisted (UAE) and conventional solvent extraction (SE) methods. Two different extraction methods were evaluated in terms of total phenolic contents and antioxidant capacity. The effectiveness of ultrasound-assisted extraction on the total phenolic contents and antioxidant capacity of extract from red pepper seed was observed and compared to the conventional solvent extraction method. Response surface methodology (RSM) was used to optimize UAE conditions of phenolic extracts including extraction temperature (40, 50 and 60 °C), extraction time (20, 40 and 60 min) and solvent volume (50, 75 and 100 mL). Based on the RSM results, the optimum conditions included an extraction temperature of 51.226 °C, an extraction time of 60 min, and solvent volume of 50 mL. The results showed that ultrasonic treatment had a significant effect on phenolic extraction yield ($p < 0.05$).

Keywords: Antioxidant capacity, extraction, red pepper seed, response surface method, total phenolic content, ultrasonic



The Effect of Different Culture Media on Production of *Haematococcus pluvialis*

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Abstract

Haematococcus pluvialis is a fresh-water green unicellular microalga which is best known source of astaxanthin. There are lots of study about this microalga because of its unique life cycle which contains two phases as green (vegetative) and red (aplanospore) stages. In green stage, cell concentration increases under favourable conditions while in red stage, astaxanthin accumulation is induced with stress as high light intensity or nutrition deficiency. Astaxanthin is a keto-caortenoid produced by marine animals and some microorganisms. It exhibits strong antioxidant, anticancer, anti-diabetic activities. The main goal of this study was to determine the appropriate culture medium for the growth of *H. pluvialis*. With this aim, the cells were cultivated in 1 L sterile cultivation bottles in three different culture media as BG11, OHM and Patent culture media at 24 °C. It was recorded that the maximum specific growth rate of 0,252 day⁻¹ was obtained in the BG11 medium. Also, the total carotenoid amount was reached the maximum value of 2.67±0.11 mg/Lin BG11 medium. The main difference in these media is nitrogen content; BG11 medium has the maximum amount of nitrogen while Patent medium has the lowest. As it understood from these results, nitrogen is the primer nutrient for the growth of *H. pluvialis* cells.

Keywords: *Haematococcus pluvialis*, Astaxanthin, Culture media, Nutrient.

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Adhesion Strength and Hardness Values of Some Varnishes Used on Wood Surfaces

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Abstract

In this study, it was aimed to determine surface hardness, Brinell hardness, and adhesion strength of polyurethane varnish, single and double component water-base varnishes and synthetic varnish which are widely used today in the protection of wooden surfaces. In accordance with this aim, varnish application was carried out on the surfaces of the samples prepared from sapele (*Entandrophragma cylindricum*) wood according to ASTM D 3023 standards. Surface hardness, Brinell hardness, and adhesion strength of the varnish layer were determined in accordance with ASTM D 4366-95, TS EN 1534, and TS EN ISO 4624 standards respectively. As a result, the surface hardness was obtained in the highest polyurethane varnish and the lowest in the one component waterborne varnish. The highest value of Brinell hardness was found in polyurethane varnish, and the difference between single component water-based, double component water-based and synthetic varnish was found to be statistically insignificant. The adhesion strength was the highest in polyurethane varnish while the lowest in single component water-based varnish.

Keywords: Wood, Brinell hardness, Surface hardness, Adhesion strength



Evaluation of Different Light Intensities on *Phaeodactylum tricornutum* production

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Abstract

Phaeodactylum tricornutum is a brown unicellular marine diatom. It has a great advantage in terms of commercial use with its rich bioactive compound content, rapid growth potential and easy cultivation conditions. Also, it contains fucoxanthin as its major carotenoid which exhibits many beneficial effects on human health. In this study, the effect of light intensity was determined for the *P. tricornutum* cultivation and fucoxanthin production. To state the optimum light intensity, the cells were cultivated during 14 days in F/2 culture medium at 22 °C with the air flow rate of 2 L.min⁻¹ under three different light intensities of 30, 45 and 65 μE.m⁻².s⁻¹. During the production, the maximum specific growth rate of 0.3 day⁻¹, which corresponded to the doubling time 2.3 day, was obtained at the light intensity of 45 μE.m⁻².s⁻¹. Chlorophyll-a and chlorophyll-c amounts were also at the highest level in the same light intensity. Fucoxanthin amount reached the maximum level of 2.26±0.03 mg.L⁻¹ at the light intensity of 45 μE.m⁻².s⁻¹. In these organisms, a light harvesting complex which is called fucoxanthin-chlorophyll proteins (FCPs) are responsible for the regulation of photosynthesis. Therefore, chlorophyll amounts were parallel with fucoxanthin changes as shown in this study. It was identified that light intensity of 45 μE.m⁻².s⁻¹ was the optimum value for the growth of *P. tricornutum* cells and production of fucoxanthin.

Keywords: *Phaeodactylum tricornutum*, Fucoxanthin, Light intensity.

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Volatile compounds and sensorial profiles of young Karalahna and Cabernet Sauvignon wines produced by spontaneous and pure yeast fermentation techniques

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Abstract

Spontaneous fermentation is carried out by the natural yeast flora that is found on grapes or winery equipment. More complex wine with unique characteristics are obtained by the effects of different yeasts and strains having role in spontaneous fermentation. However, winemakers prefer using pure cultured yeast (strain of *S. cerevisiae*) to ensure the controlled fermentation and quality standard during wine production. In this study, effects of spontaneous and pure yeast fermentation techniques on volatile compounds and sensory characteristic of red wines produced from Karalahna (origin; Bozcaada, Çanakkale) and Cabernet Sauvignon grapes (origin; Eceabat, Çanakkale) were investigated. Wines were produced with both spontaneous fermentation and inoculation of pure cultured yeast in 25 L glass fermenters in three replicates. Gas Chromatography-Mass spectrometry (GC-MS) was used for the identification of volatile compounds and Solid Phase Microextraction Technique (SPME) was applied for the isolation of volatile compounds. Higher alcohols (isoamyl alcohol, 4-methyl-2-pentanol, 2,3-butanediol, 1-hexanol, 1-heptanol, phenethyl alcohol etc.) and esters (ethyl acetate, isobutyl acetate, ethyl butyrate, 1-butanol 3-methyl acetate, 1-butanol 2-methyl acetate etc.) were the major volatile components found in wine samples. Higher alcohols were found higher in wines produced by spontaneous fermentation of Karalahna grapes, while they were higher in wines produced by with pure yeast inoculation of Cabernet Sauvignon grapes. Sensory evaluation of wine samples was achieved with a trained panelist group (6 panelists) using descriptive sensory analysis method. A 10-point scale (0= very low flavor intensity, 10= very high flavor intensity) and 17 descriptive terms were used for the evaluation of wines. In general, wines produced by spontaneous fermentation received higher scores in terms of “red fruit aromas”, “sweet spice” and “pungency” than the wines produced with pure yeast inoculation.

Keywords: Red wine, spontaneous fermentation, volatile compound, sensory profile



Whey Protein Hydrogels: Food and Non-food (Biomedical) Applications

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Abstract

Protein hydrogels serve good opportunity for use in food and non-food (biomedical) applications. Whey protein hydrogels can be considered as significant matrices to carry bioactive agents for various purposes such as food processing, controlled drug delivery and tissue engineering applications due to their excellent biocompatibility and microporous structure with tunable porosity. This research focuses on the review of whey protein gels, obtained by enzymatic hydrolysis, to be used as potential matrices for target applications by providing better stability, compatibility, and improved functionality. Enzyme-induced hydrolysis of whey proteins forms gels having desirable stiffness and containing pores with adjustable size available for entrapment of various micro- and nano-sized components such as nutraceuticals, growth factors, natural colorants and pharmaceuticals. Hydrolyzed proteins form aggregate gels with three dimensional network containing a mass of molecular interactions. The gel network may be potentially modified with other biological grade macromolecules (eg. polysaccharides) to improve mechanical properties of the matrix desirably. Enzyme-induced whey protein gels are also expected to provide efficient scaffolds for accommodation of living cells in relation with various biomedical applications. All the mentioned aspects indicate that protein hydrogels based on dairy waste are important value-added products produced by using a sustainable source and they promise application opportunities in combination with innovative technologies.

Keywords: protein hydrogels, bioactive agents, enzymatic hydrolysis, carrier matrix, whey



Mechanical and Structural Characterization of Whey Based Protein Gels

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Abstract

Gelation is one of the most important functional properties of proteins used in food processing. Whey proteins are able to form gel matrices capable of holding large amounts of water and other ingredients. This property is extremely important for various applications in food industry. Gelation of whey proteins are mostly achieved by heating and enzymatic hydrolysis. Heat-treated whey proteins form fine-stranded clear gels whereas enzyme-treated ones form aggregated turbid or opaque gels. Heat-induced protein gels are produced by formation of intra and inter chain disulfide bonds after unfolding of protein. However, aggregate gels are produced through mainly non-covalent interactions between hydrolysis products, peptides. Determination of the textural properties and microstructure of the gel network provide significant information for characterization of the gels to facilitate their use in target applications such as carrying of active agents by maintaining their stability, target delivery and improvement of product texture desirably. The purpose of this study was to investigate mechanical and structural characteristics of whey protein gels using different techniques such as rheometry, microscopy and spectroscopy. Whey protein gels prepared through different processes exhibited different mechanical and structural properties. Porosity in the gel microstructure changed remarkably as the gel composition changed. Conformational changes were detected in the secondary structure of proteins during gel formation. Further research will target investigation of these whey protein gels for the entrapment ability of the bioactive components with controlled release purpose.

Keywords: gelation, microstructure, whey proteins, spectroscopy



Transition from cultivation bottle to stirred tank photobioreactor for fucoxanthin production

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Abstract

Microalga cultivation systems have various types as open systems and closed systems which are called photobioreactors. Photobioreactors have many advantages like ease of control, low contamination risk, high biomass yield, etc. There are several types of them such as stirred tank, flat plate, tubular and horizontal photobioreactors. Fucoxanthin is an important carotenoid that can be produced by microalga *Phaeodactylum tricornutum*. It is used in food, pharmaceutical, cosmetic and aquaculture areas through its biological activities. In this study, transition from 1 L cultivation bottle to 2 L stirred tank photobioreactor for fucoxanthin production from *P. tricornutum* was aimed. Firstly, microalgae were cultivated in F/2 culture medium at 18 °C and applying 3 L.min⁻¹ airming rate in a 1 L sterile bottle. Then, another cultivation was carried out in stirred tank photobioreactor according to scale up methodology based on constant power consumption rate in the cultivation bottle. At the end of the study, maximum cell density was 11.5±0.4*10⁷ cells/ml in cultivation bottle while it has reached 16.2±0.8*10⁷ cells/ml in photobioreactor. Fucoxanthin amount was also increased from 2.5±0.001 mg.L⁻¹ in bottle to 5.7±0.05 mg.L⁻¹ in stirred tank photobioreactor. Fucoxanthin amount per cell dry weight was obtained about 3.5 times higher in photobioreactor than cultivation bottle. As a result, transition was done successfully with the increase of biomass and product yield. Applied scale up methodology provided more effective cultivation than cultivation bottle.

Keywords: Stirred tank photobioreactor, Fucoxanthin, *Phaeodactylum tricornutum*

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Comparison of Different Air Flow Rate on Fucoxanthin Production

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Abstract

Carotenoids are organic pigments that can be found in plants, animals and some microorganisms and have applications on food, health, cosmetic and aquaculture sectors. They have more than 700 species and fucoxanthin is one of them. This carotenoid is a brown pigment and especially produced by edible seaweed. It has important biological activities like antioxidation, anti-obesity, antiinflammation, anti-diabetic activity, etc. It can be also obtained from microalgae at high amounts and in a short time. The main goal of this study was to investigate the air flow rate on fucoxanthin production from *Phaeodactylum tricornutum* which is a fucoxanthin-rich microalga. The cells were cultivated at three different air flow rates (1 vvm, 2 vvm and 3 vvm) in the sterile cultivation bottles for 9 days. Cell concentration was reached maximum amount, $9.85 \pm 0.25 \cdot 10^7$ cells/ml, at 3 vvm aeration rate. Furthermore, fucoxanthin amount was at the highest level with the value of 3.7 ± 0.09 mg/L at 3 vvm aeration rate., Specific growth rate and fucoxanthin accumulation rate at 3 vvm aeration rate were found as 0.336 day^{-1} and $0.411 \text{ mgL}^{-1} \text{ day}^{-1}$, respectively. In conclusion, the best result was obtained at the air flow rate of 3 vvm for the biomass concentration and fucoxanthin production. The important point to note here is that high aeration rate is related with mixing mixing should be provided effectively for fucoxanthin production.

Keywords: Fucoxanthin, *Phaeodactylum tricornutum*, Aeration, Mixing.

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Effects of Herbal Extracts (Thyme, Rosemary and Basil) on Biogenic Amine Accumulation of Fish Ball Made From Mackerel (*Scomber scombrus*) During Frozen Storage (-18°C)

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Abstract

Biogenic amines play an important role in the biological functions of humans and ingestion of foods containing high levels of biogenic amine results in toxic effects in human body. Among the biogenic amines, histamine is potentially hazardous and cause histamine poisoning. Other biogenic amines like putrescine and cadaverine can increase histamine toxicity. Fish and fish products are regarded as the main food that is responsible for histamine poisoning. In this study, effects of thyme (*Thymbra spicata*), rosemary (*Rosmarinus officinalis*) and basil (*Ocimum basilicum* L.) extracts at doses of 0.05% obtained by solvent extraction method on histamine, putrescine and cadaverine accumulation in mackerel (*Scomber scombrus*) balls were investigated during frozen (-18°C) storage for 10 months. Fish ball were prepared according to the method of López-Caballero et al. (2005) with minor modification. Biogenic amines were analyzed using a HPLC method (Ozogul et al., 2002). The effects of thyme, rosemary and basil extracts on biogenic amine varied depending on spesific biogenic amine and storage time. The levels of biogenic amines fluctuated during the storage period. Generally, biogenic amine accumulation in mackerel balls with herbal extract was lower than control groups. There are many factors affecting the formation of biogenic amines such as aquaculture conditions, food, fish species, body composition, and storage and processing conditions and the presence of decarboxylase-active microorganisms and the availability of free amino acids. Herbal extracts were found to be effective in controlling the growth of bacteria and thus, biogenic amine formation.

Keywords: Mackerel fish ball, Biogenic amine

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Adana Farmers Approach Towards Implementation of the Provincial Crop Insurance, Problems and Suggestions

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Abstract

Adana holds an important place in agriculture growers farming products must be aware of the situation in the agricultural insurance trends for agricultural insurance, pension insurance and make and adoption, problems and solutions have been determined. In the study, a total of 36 880 agricultural enterprises and to those who are determined that the last 5 years insurance. Insurance 18 050 who are taking 18,830 businesses. Sampling, "Simple random sampling method" is used; In 2012, the manufacturer of herbal products, insurance (60 people), taking the (61 people) A total of 121 surveys were made to be. In the study, "Producer of the expectations from the state" to the question; The answer they gave; The most important expectations in order of importance; 21.7% of the insured, taking 16.4% of unable to make "are extended insurance coverage while" they said. "What are your expectations from the insurance company on agricultural insurance practices?" To the question; When expectations are ranked according to the most important expectations were answered; 60% of the insured, "they give training in agricultural insurance" and taking 37.7% of unable to make "must overcome the lack of information" they said. Producers, "natural disaster risks faced by the producer" to the question; given answers; When natural disasters listed in order of importance; unable to make 42.6% with 56.7% of those taking out insurance "full" they said. "Suffered by producer risks" to the question; The biggest risk is the risk are ranked according to the response given; 85% and 36% of the insured to make unable to make "natural disasters", they said.

Keywords: Crop Production, Agricultural Insurance, Farmers Trends, Adana



Investigation of Forest Road Construction by Excavator and Bulldozer on the Different Ground Types in Southern Turkey

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Abstract

Forest roads are necessary to provide access to the forest for general management, maintenance, timber extraction, recreation, regeneration, production and fire. The construction of forest road network is considered as the key element for successful forest management. The planning forest road network depends on social requirements since they provide access to forest villages, rural settlements and recreational areas. In locating forest roads, construction methods and equipment selection directly affects the economical, functional and ecological efficiency of the forest roads. Proper design and location of forest roads will reduce the need for major repairs and save on maintenance costs over time. In this study, forest road construction techniques by using excavator and bulldozer were investigated based on sample roads constructions activities conducted in different forested lands and different ground types in Antalya region of Turkey. The productivity of excavator and bulldozer was investigated such as soil and rock ground types. The study was realized two research areas. The productivities of excavator and bulldozer were evaluated and some suggestions were provided that according to environmental effects of these machines.

Keywords: Road construction, Productivity, Bulldozer, Excavator, Environmental effects



The Effect of Interaction between Cadmium and Zinc on Development of Buckwheat (*Fagopyrum esculentum*)

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Abstract

Cadmium has got a high mobility in the soil and plant system. because of that cadmium can interfere very easily to the human and animal food chain. Because of the cadmium storage in plant, the quality of crops is decreasing and this is also causing for yield loss. Buckwheat is popular at the moment for healthy nutrition. The seeds are containing a lot of active component. The biological function of cadmium is not known over the plants and it is not a necessary element. The plant is generally taking in small amounts the cadmium and this element is competing with the Zn. If in the environment is cadmium then it is establishing a zinc concentration on the top of the shell of the buckwheat. In this study we want to examine and observe the relation of cadmium with zinc. Experiments were conducted in greenhouse conditions to study interactions between Cd and Zn. We applied to different doses Cd(0-12.5-25-50-100 mg Cd kg⁻¹ soil) and Zn (0-10-30 mg Zn kg⁻¹ soil) to soil and incubated about 60 days. Later buckwheat seeds (Gunes and Aktas species) were sown and grown under greenhouse conditions. The test plants were irrigated by using pure water after the planting process. In the study, the parameters of plant length, length of leaf, leaf proportional water content, chlorophyll content, biomass content (kg/da), grain yield (kg/da), thousand grain weight, number of grains, and grain yield per plant were examined. According to the results, Cd and Zn application did not affect leaf proportional water content on both cultivars. Generally, Cd doses restricted height extension. The Cd and Zn interaction did not significantly affect thousand grain weights both of buckwheat cultivars. The application of Cd and Zn did not significantly affect the biomass and the number of seeds on both cultivars.

Keywords: Buckwheat, cadmium, phytoremediation, zinc.



Some Native Grass Species that Potential for Ornamental Plants: Case of Artvin Region

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Abstract

Many natural plant species have the potential to be cultured and reproduced for using as ornamental plants in Turkey which has a rich floristic diversity. It is necessary to identify the natural plant species which has ornamental character and to ensure their usability in sustainable planting design applications cause of their when considering the benefits such as water saving, ease of maintenance and easy adaptation. In this respect, natural grass species as well as woody ornamental plants need to be investigated. Nowadays, using ornamental grass species as solitary and grouping in planting designs has become widespread with the influence of planting design approaches such as sustainability, xeriscape landscape, thematic gardens. Ornamental grass can be used in a wide range of interior spaces and residential gardens to public spaces. Thus, ornamental grasses can increase diversity in planting design, create different compositions, support designs aesthetically, functionally and ecologically. In this study, 15 grass species belonging to 15 different geniuses among 195 taxa grown naturally in Artvin region were selected and their characteristics and potential use in landscape design were investigated. Species were selected by taking into account such features as leaf form, seasonal coloring, flower-spike aesthetics, decorative form, texture, size and ecological requirements. As a result, the tables describing the properties of the selected species were created and some suggestions were proposed about the usage areas of these species in planting designs.

Keywords: Ornamental grass, Grass species, Native grass, Planting design, Artvin



A Research on The Quality Features of Fibres of Some Cotton Sorts and Correlation Between Fibre Quality Under the Organic and Conventional Production Conditions of Harran Plain

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Abstract

Cotton is one of the important and strategical products in human nutrition and clothing. Cotton is one of the products which is most exposed to chemicals. The over usage of chemicals causes negative effects on environment and natural balance. The products are exposed to chemicals when they are still in plantation. This fact causes significant risks for the future of global agriculture and sustainable farming. This research was conducted in 2013 and 2014. It aims to show the possibilities of organic cotton farming in our country and in our region and define the correlation between the cotton fibres which were produced in conventional and organic farming conditions.

Keywords: Cotton, Organic agriculture, Industry Plants.

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Determination of Recreational Use and Visitor Trends of the Protected Areas of 'Karagöl-Sahara National Park'

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Abstract

Protected areas are important, where natural and cultural resources are protected, educational and scientific studies are conducted and have multiple functions in terms of recreational, social, ecological and economical as well. The Karagöl-Sahara National Park in Artvin has been elected as study area. This study aimed to determine participants' recreational trends, their participation level to activities and recreational demands. In this study, a questionnaire is conducted to determine recreational trends, which consist of questions such as users' profile, user-space relationship, users' satisfaction and preferences in recreational activities. According to obtained results, some suggestions were proposed that can be shed light on physical development plans and be reference for future design in performing recreational demands

Keywords: Recreation, Protected Areas, Visitor Trends, Artvin, Karagöl-Sahara National Park



Determination of Bonding Strength of Laminated Wood Elements Supported with Various Materials

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Abstract

This study aims to determine the bonding strength of laminated wood elements supported with various materials. With this objective, wood paper veneers with the thickness of 2 mm with 9 layers were prepared from Scots pine (*Pinus Sylvestris* L.) wood, which is used extensively in Turkey, and were glued with PVAc-D3 adhesive by placing 3 types of supporting sheets (plastic wire mesh, fiber wire mesh and aluminum wire mesh). The density values of the prepared samples were determined according to TS 5497 EN 408 and the bonding strength values were determined in accordance with TS 5430 EN 204 and TS EN 205. As a result of the experiment, all of the supporting sheet materials decreased the bonding strengths. The highest bonding strength was obtained from the control specimens (8.768 N/mm²), while the lowest bonding strength was observed in the samples, reinforced with aluminum wire mesh (4.063 N/mm²).

Keywords: Wood materials, laminated wood, scots pine, supported laminated wood, bonding strength.

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Traditional Cheeses of Turkey: Their Lactic Microflora and Identification Methods

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Abstract

There are lots of traditional cheeses in Turkey which are made from raw milk without addition of starter culture. In those cheeses, the quality of the final product is highly dependent on the skills of the artisan which make it very hard to get a standart in respect to both health and quality. For this reason, only a small amount of them can find a place in industrial production scale. According to researches there are 193 types of cheeses are produced, however, only 9 of them have their patent. In our country 40-50 types of cheeses are produced among which white, kashar and tulum cheeses constitute the largest portion. To be able to make remaining cheeses to be produced in industrial scale, it is quite essential to determine lactic microflora of those cheeses. By this manner raw milk can be pasteurized and lactic microbioata can later be added as so called starter culture. In today's world, biochemical and molecular methods are used for the identification of lactic acid bacteria. Since especially early 2000's molecular methods have been so much better with respect to typing, reproducibility and distinguishing species from each other when compared to biochemical ways. Beside, it is a known fact that statistical and methodologic error probability are higher in biochemical ways. Apart from molecular and biochemical methods, mass spectrophotometry based on protein profiling can also be used for identification. Yet, molecular methods give the most accurate result among all these methods.

Keywords: Traditional, Cheeses, Identification, Lactic acid bacteria, Mass spectrometry



Mass Spectrometry for the Identification of Foodborne Microorganisms

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Abstract

Foodborne microorganism are of great interest due to having potential risks regarding health and providing functional properties. Therefore identification of such microorganism is the first step of food microbiology laboratory. For this manner, rapid, safe and cost-effective methods play a vital role in identification. Eventhough molecular methods are mostly preferred with advacing technology, they have some disadvantages, as well. The most important ones among them are that pre-identification steps take some time, materials are so expensive and they need qualified laboratory personel. On the other hand, it is simply possible to use pure bacteria culture for identification in just a few minutes directly from petri in Matrix-Assisted Laser Desorption Ionization – Time of Flight Mass Spectrometry (MALDI-TOF MS) method. Briefly, in MALDI-TOF MS samples are mixed with an appropriate matrix material to be ionized by laser irradiation which is later going to be desorbed as gaseous ions. These ions are then accelerated and transferred to an analyzer in which they are seperated and detected based on the ratio of molecular weight to charge (m/z). Yet, the disadvantage of this remarkably rapid method is inefficacy of cell mass spectrometries saved in database. Although the database seems to be a disadvantage, it is still being enhanced by every version. Researches comparing 16s rRNA PCR, biochemical methods and MALDI-TOF-MS indicate that MALDI-TOF-MS can be used for identification in food microbiology.

Keywords: Mass Spectrometry, MALDI-TOF-MS, rRNA, PCR.



Investigation of Adverse Conditions at Harvesting Operations after Forest Fire in Turkey

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Abstract

Forest fires are very important for our country's forests. Especially, forest fires have inflicted great losses on the Mediterranean and Aegean areas. Until the last five years, the forest area loss is too much during forest fires. For our country, forest fires gives great harm to the natural life and besides, forest fires cause economic losses. In this study, Adrasan forest fire area is investigated. Adrasan region is located in Antalya province and this region is a touristic attraction. Adrasan forest fire has occurred in June, 2014. In this fire were burned 140 hectares area and 4500 m³ trees. Burning area is completely *Pinus brutia* forest. After the fire, the burned area should be planted in a year. Therefore, trees inside burned area should be completely emptied. Products are in the form timber and industrial wood. Average slope of region is changed between 40% and 50%. Within the Adrasan region, firstly, skid road and skid trail for extraction is opened. The slope of skid trail is changed between 10% and 18%. The different type farm tractors are used for skidding of logs to burn area. Inside burn area, chute system is used that installed in a short distance. In this study, wood harvesting operations are investigated in burn area. The cut of trees, skidding or transporting and loading operations are investigated besides. During the forest product operations, the adverse conditions are investigated as ash, dust, high slope, temperature etc. in fire area. Especially, the difficulties of work and study area condition for worker are observed. The some proposal has been made in terms of work safety.

Keywords: Forest fire, Tractor, Skid road construction, Extraction

The Effect of Different Levels of Supplemented Some Essential Oils and Fruit Peel Powders in Quail Diets on Cholesterol, Vitamin A, E and D in Eggs

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Abstract

This study was conducted to determine the effect of some essential oils and fruit peel powders added to quail rations at different levels on egg cholesterol, vitamin A, vitamin E and vitamin D levels. In the study, the birds were divided into 9 different groups with 3 replicates; control (C), 2-4% orange peel powder (OPP), 2-4% pomegranate peel powder (PPP), 0.5-1% orange peel oil (OPO) and 0.5-1% pomegranate seed oil (PSO). The experiment was lasted for 8 weeks, and the levels of cholesterol, vitamin A, vitamin E and vitamin D levels of the collected eggs were measured. In the experimental groups, the highest cholesterol level was found in the C group (72.01 mg/10g) and the lowest one in the 1% OPO group (54.85 mg/10g); The highest value for vitamin A was in the 0.5% PSO group (60.60 IU/10g), the lowest value in the 2% PSP group (53.10 IU/10g); the highest value for vitamin E in the 4% OSP group (0.55 mg/10g), the lowest value in the 1% PSO group (0.08 mg/10 g); the highest value for vitamin D was in 1% OPO group (5.38 IU/10g) and the lowest value in 2% PSP group (4.79 IU/10g). Levene, ANOVA and Welch tests were used for statistical analysis. As a result, egg cholesterol ($F=36.934$, $P<0.01$) and vitamin A levels ($F=3.592$, $P<0.05$) were significantly affected from the treatments, however, vitamin D ($F=0.718$) and vitamin E ($F=2.362$) levels were not.

Keywords: Quail, diet, essential oil, fruit peel powder, cholesterol, vitamin A, vitamin E

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Early Posthatch Feeding Strategy in Poultry: The Importance of Some Amino Acids

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Abstract

In early posthatch, delayed time access to feed and water and the structure of feeds are critical factors affecting development. Early access to feed and water in the hatchery or pen, show better growth rates in poults when compared to standard practices. However, it has been scientifically indicated the harmful effects of the delayed access to feed and water on the posthatch survival, weight gain, and even further performance. In this review, has been focused on importance of early posthatch feeding strategy and some amino-acids, even branched-chain amino acids in the feed in this period. Studies showed that it is necessary to use some specific supplements such as egg protein amino acids, mixtures of amino acids, branched-chain amino acids or β -hydroxy- β -methylbutyrate in the initial rations as well as early access to feed and water to control the negative effects of delayed access to feed and water on poultry.

Keywords- Poultry; hatching; amino acids; performance; skeletal muscle; digestive tract.



Nanotechnology Applications in Functional Foods

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Abstract

There has been a significant increasing in new trends relevant human health and diet. This has led to the improvement of a different type of foods, its called as a functional foods. Functional foods are simply a suitable description of foods, or their components which may contribute health benefits associated with nutrition. However, some challenges, involving discovering of beneficial combination, improvement enough food delivering matrix and production formulations and establishing optimal intake levels, need to be considered. Nanotechnology applications can provide new solutions in a large part of these challenges. Some of these applications involve; developed taste, texture, colour, flavour, rised bioavailability and absorption of nutraceuticals and health supplements, nanosensor for storage and transport, encapsulation of food aditives and also components. Lately, there has been significant interest in the improvement high performance delivery vehicles for the protection and encapsulation of biologically active substance of food origin, using nanotechnology applications. Many bioactive ingredients, nutrients and also phytochemicals can be loaded into biocompatible and biodegradable nanoparticles that will develop their aqueous solubility, bioavailability, stability and circulation time in the body. Nanometresized delivery systems promote more surface area and have the latent to develop solubility and controlled release and enhance bioavailability and greater precision targeting of entrapped compounds compare with micrometre-sized systems produced by traditional microencapsulation techniques. It was focused on this topic that the potential using of nanotechnology applications in functional foods. It might be beneficial for using nanotechnology in order to develop food composition, identify new target delivery systems for optimizing health, identify sites of actions for bioactive food components. Inspried by nanotechnology applications, functional food sector will see large advantages in the improvement of new delivery systems for bioactive and nutraceuticals compounds. This will promote great latent for development the efficiency and effectness of bioactive compounds to develop human health.

Keywords: Nanotechnology, Functional Food, Health, Food Science

Determinations of Forest Roads Conditions Using Low Cost Unmanned Aerial Systems

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Abstract

This paper covers investigation of techniques and possibility detect the damages and losses occurring in the constructing process of forest roads by means of low cost unmanned aerial systems. In this study, aerial images were taken by a low cost unmanned rotary wing. Pre-harvest and post-harvest pointclouds and 3D models generating from aerial images were compared and then, the changes were analyzed in terms of dimensions, slope, and cut-and-fill volumes associated with forest skidding roads. To verify the accuracy of the model, cross sections of the road surface were surveyed tachymetrically and compared with the cross sections created in the 3D model in ArcMap. The RMSE of the values of the control points in the 3D model cross sections compared to the values of the points in the tachymetric measurement of the cross sections reached to within 0.0274 m. The results of the tested road section showed that the unmanned aerial systems could be used to detect the forest road surface damage show the difference in accuracy being up to 3 cm compared with the accuracy of the current tachymetric methods. Based on the results, we can conclude that the obtained images from cheap hand held camera placed on unmanned rotary wing process the highest accuracy as well as current measurement techniques. It is also available for multiple analysis in forestry applications. This approach is important in terms of being faster, cheaper, more accessible, innovator compared to Tachymetric, and Terrestrial Lidar measurements. Especially its potential to obtain a three-dimensional surface model with high sensitivity in a faster way brings many advantages.

Keywords: Forestry, low cost unmanned rotary wings, point cloud, forest road, GIS.

Evaluation of Cold Tolerance by Morphological and Molecular Methods at Booting Stage in Rice

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Abstract

Rice is a tropical plant and does not have an inbuilt resistance to cold but in Turkey and elsewhere it is grown in temperate regions. Evaluation of cold tolerance under controlled temperature conditions may be performed. The aim of this study was to determine the effect of cold stress on rice genotype at the booting stage. The experiment conducted on 13 rice genotype at Edirne Trakya Agricultural Research Institute in 2013, 2014 and 2015. Cold tolerance was evaluated on booting stage by-holding them at 9°C for 8 days then rice transfered greenhouse until maturity time. Rice panicle harvested and genotypes classed in cold tolerance class according to sterility percentage at booting stage cold stress. During to booting stage the varieties Tunca Hamzadere and IR50 were found as susceptible. Pasalı Mevlutbey and Halilbey varieties were found as tolerant. It was observed that indicated types where more susceptible to cold than Japonca types. Furthermore it was aimed to determine the genotypes that were tolerant to cold during booting stages by means of molecular methods such as inspecting QTLs.

Keywords: Booting stage, cold tolerance, rice.

Antimicrobial Efficiency of Slightly Acidic Electrolyzed Water on Some Vegetables

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Abstract

Slightly acidic electrolyzed water (SAEW) a type of electrolyzed water (pH of 5.0-6.5, ORP 800-900 mV, ACC 10-30 ppm and high HOCl) and it is currently gaining popularity as a sanitizer in the food industry to reduce microbial populations on foods. This study covers the results of researches related to SAEW washing on some vegetables for microbial reduction. There are limited number of research studies regarding antimicrobial effect of SAEW and improvement microbial reduction in the decontamination washing of vegetables with using SAEW. In last five years, the new hurdle treatment which enhanced the microbial reductions compared to SAEW treatment alone and combined with ultrasound were carried out. Microbial reductions of total viable counts, mould and yeast counts, inoculated *E. coli*, and *L. monocytogenes* were in the range of 0.5-1.5 and 1.0-2.1 log cfu/g on different vegetables such as lettuce, cabbage, spinach, pepper and tomato with using SAEW (pH 5.0-6.5, ORP 500-950, 21-34 ACC, 1-3 min) alone and combined with ultrasound (40 kHz), respectively. The results indicate that the decontamination washing with SAEW in combination of ultrasound treatment has potential as a decontamination treatment to improve the antimicrobial efficacy of SAEW on vegetables.

Keywords: Slightly acidic electrolyzed water, antimicrobial, decontamination, vegetables

Purge and Trap Extraction Use for the Characterization of Volatile Compounds of Shade-Dried *Tussilago farfara* L.

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Abstract

Tussilago farfara L., namely coltsfoot, is a perennial, yellow-flowered, medicinal and aromatic plant originated in Europe, however, has an extensive distribution in all Northern Hemisphere. The leaves and flowers of this plant have long been used for the therapeutic purposes, especially for respiratory ailments (chronic dry cough, asthma and bronchitis) and some other diseases (such as; skin infections, injuries, diabetes). Coltsfoot is also considered as a natural food flavoring and tobacco alternative due its aroma-rich property. Although, there are many of comprehensive studies focused on the volatiles of coltsfoot essential oil, only a few number of researches exist on the aroma profile of its leaves and flowers. In the present study, aroma compounds of shade-dried leaves and flowers of coltsfoot were isolated by purge and trap method and analyzed by GC and GC-MS. Several kind of aroma subgroups were identified and quantified in this outstanding herb. A total of 31 aroma compounds, including notably monoterpenes and sesquiterpenes, 5 alcohols, 2 esters and a volatile phenol compound were determined. Results showed that the terpenes, such as; Linalool (19,96 %), Caryophyllene (15,71%), α -pinene (9,34%), (*E*)- β -farnesene (8,71), Germacrene (7,57 %) and Camphene (4,30%), were the most abundant compounds among overall aroma profile.

Keywords: *Tussilago farfara* L., Coltsfoot, Purge and trap, Aroma



Pulsed Electric Field in Food Technology

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Abstract

Increasing consumer demand for new products with high sensory organoleptic and nutritional qualities has spurred a search for new alternatives to processed foods [1]. For many years, thermal processing was the main technology for producing safe products with long shelf lives, although in most cases losses of fresh flavors, vitamins, and some physicochemical characteristics were the price of safety and long-term stability [1]. The application of nonthermal sterilization methods, such as Pulsed Electric Fields (PEF) in food processing, is of interest because of the possibility of preserving valuable but heatsensitive ingredients [2]. Pulsed Electric Field (PEF) processing as a nonthermal technique has been proven to inactivate microorganisms with minimal losses of flavor and food quality, potentially making it the answer to current consumer demands [1]. The survival of microorganisms after PEF depends mainly on total energy input and field strength of PEF [3]. Additionally, environmental parameters in food may influence the efficacy of inactivation of microorganisms by PEF [3]. The low processing temperatures used in this nonthermal technology allow the process to be energy efficient, which translates into lower costs and fewer environmental impacts [3]. The essence of PEF technology is based on the inactivation of high voltage applied over very small periods of time, expressed in micro seconds to food, on enzymes and microorganisms. The PEF system consists of a high-voltage boost generator, application chamber, flow control system, control and monitor device [5]. PEF applications have been applied on many food types [4]. Significant progress has been made in the PEF technology during the process, and this technology is now able to be successfully applied to liquid food [5].

Keywords: Pulsed electric field, food production, non-thermal technology

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Linkage Between Some Physico-Chemical Properties And Erodibility Indices Of Soils Developed From Different Parent Material (A Case Study From Gümüşhane)

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Abstract

The objective of this study was to determine some physico-chemical properties and erodibility indices of soils formed under different parent material such as basaltic-andesite and limestone) in Gümüşhane district. For this aim, totally 60 soil pits were dug at depth of 40 cm. After soils are prepared for analysis, some physical (sand, silt, clay, field capacity, wilting point, available water holding capacity), and chemical (pH, electrical conductivity, organic carbon, CaCO₃) properties and also their erodibility index (clay ratio, colloid moisture equivalent, erosion ratio, dispersion ratio) were identified. The texture classes of soils found loamy clay for the limestone parent material and sandy clay loam for the basaltic-andesite parent material. The clay content values are % 36,72 developed from the limestone and %20,75 developed from the basaltic-andesite. In terms of the soil organic carbon values, which contribute to soil aggregation and the granular structure, are more into soils formed from the limestone parent material. These conditions cause to less erosion at the limestone parent material. However, the characteristics of the soils developed on both parent materials are above the erodibility indices limit values and are extremely susceptible to erosion. According to these results, the soils without vegetation cover will be exposed to severe erosion unless afforestation practices are not carried out.

Keywords: erosion, erodibility indices, soil properties, Gümüşhane.



Determination of Cooking Methods and Consumption Frequency of Local Foods in Hatay Province

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Abstract

This study was carried out with the aim of determining the cooking methods and frequency of consumption of traditional foods prepared in houses in Hatay province. 120 randomly selected individuals were surveyed in Hatay province centre and the findings were evaluated. In addition, the questionnaire consists of multiple-choice and open-ended questions. The questionnaire involved demographic information's, firing methods and frequency of consumption of traditional foods. Surveys were conducted by researchers using a face-to-face interview technique. Foods are classified seven groups; meat dishes, vegetable dishes, bulgur dishes, soups, mezzes, salads and pastries. In this study, 42.55% of the participants were 19-32, 38.3% were 33-46, 17.5% were 47-60 and 1.7% were between 61-74 years of ages old. Moreover, 25% of them are primary school graduate, 14.2% are middle school graduate, 28.3% are high school graduate and 32.5% are university graduates and also 70% of the participants are married. It was determined that 85.8% of the participants did not get training on food cooking and 72.5% did not feel that they wanted to get education on it. This result is considered that the foods are prepared as learned from the parents. It was indicated that 69.2% of the participants received help when they prepare local foods. Among the meat dishes, the preparation of the tepsi kebab was 88.9% cooked in the oven and consumed 44.9% monthly, while the preparation of tepsi oruğu was mostly (%78,2) cooked in the oven and consumed monthly (53.8%) among the bulgur dishes. Similar work in other regions of our country will provide information about how to cook local foods and their consumption frequency. This may be a guide in determining nutritional habits and nutritional problems.

Keywords: Hatay Cuisine, Cooking Methods, Consumption Frequency

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Contributions of the Urban Open-Green Spaces to the Recreational Necessity: A Case Study of Artvin Çoruh Park

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Abstract

Urban open green spaces is important not only diminish the monotone structure, bring into balance between mass-space and improve the human well-being in cities but also give an opportunity for the active and passive recreational activities for social and cultural interaction. Urban parks, which are supported social and cultural development as well as their aesthetical, ecological and functional are very important as well. Urban parks is enabled passive recreation activities such as relax and view sightseeing and active recreation activities such as sports and picnic. The purpose of this study is determined active and passive recreation activities in Çoruh Park dealing with the contribution of its to Artvin's open green spaces. Within this context, assessments about active and passive recreation activities will realize by on-site observation method.

Keywords: Open green spaces, Recreation, Urban parks, Artvin.

Using natural and synthetic progestagen with FSH or PMSG applications for estrus synchronization of Akkaraman sheep in breeding and out-of breeding seasons

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Abstract

The aim of this study was to determine the effect of natural and synthetic progestagens with FSH or PMSG applications for estrus synchronization of Akkaraman sheep in breeding and out-of breeding seasons. Akkaraman ewes with similar live weights (51.36 ± 1.1 kg) and at least two parturitions were synchronized at breeding (September-November, $n = 62$) and out of breeding (April-June, $n = 60$) seasons. Forty eight hours prior to estrus synchronization application, intramuscular injection of 1 cc PGF 2α was performed to luteolyse the corpus luteum (CL) in all experimental ewes. The ewes were allocated randomly into two groups in both seasons. Estrus of ewes in the first group (breeding season; $n=32$ and out-of breeding season; 33) were synchronized with intra-vaginal CIDR device containing 0.30 g natural progesterone. Estrus of ewes in the second group (breeding season; $n=31$ and out-of breeding season; 32) were synchronized with intra-vaginal sponges containing 30 mg flugestone acetate. CIDR and intra-vaginal sponges were withdrawn following 12 days and 600 IU PMSG (CIDR, breeding season; $n=15$ and out-of breeding season; $n=16$ and intra-vaginal sponge, breeding season; $n=15$ and out-of breeding season; $n=16$) or 1 ml FSH (CIDR, breeding season; $n=17$ and out-of breeding season; $n=17$ and intra-vaginal sponge, breeding season; $n=16$ and out-of breeding season; $n=16$) were injected intramuscularly in both seasons. Forty-eight hours later from injections, ewes were introduced to teaser Akkaraman rams and ewes in estrus were recorded during 4 days. There were no significant differences in terms of estrus rate between FSH (76.47%) and PMSG (86.67%) applications with natural progestagen, but FSH (62.50%) application with synthetic progestagen decreased ($p<0.05$) estrus rate compared to PMSG (80.00%) application in breeding season. FSH applications with natural (64.71%) or synthetic (56.25%) progestagen decreased ($p<0.05$) estrus rate compared to PMSG (natural progestagen; 81.25% and synthetic progestagen; 75.00%) in out-of breeding season. PMSG application showed same estrus rate in both progestagens treatments and seasons, but FSH application with natural or synthetic progestagen tended to be lower estrus rate in out-of breeding season compare to breeding season ($p=0.062$). These results show that application of FSH with synthetic progestagen treatment may decrease success rate of estrus synchronization in Akkaraman ewes, especially in out-of breeding season.

Keywords: breeding season, estrus synchronization, natural progestagen, synthetic progestagen, FSH, PMSG

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The Situation of Silifke's Strawberry Growing

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Abstract

The Silifke region is the ideal region for producing strawberry (*Fragaria ananassa*) in terms of climate and soil characteristics. In Silifke, there has been a rapid increase in strawberry cultivation especially in the last 10 years, In recent years, strawberry production have been significantly increased by the using of frigo seedlings and the adaptation of new varieties to the region, As a matter of fact, strawberry cultivation, which started with of 7500 decares and production of 13,503 tons in 1991, has reached to 19,200 decares area and of 52,474 tons production capacity in 2016. There are some problems as high cost of the product, the lack of special support for fruit production, the need for intensive work in harvest time and to difficult of storage conditions, to difficult of transportation to markets, packaging and agricultural organization. In this study, strawberry cultivation in Silifke district was investigated, and some information was presented about problems and solutions

Keywords: Silifke, strawberry, marketing, packaging

Effect of Different Temperature Applications on Germination in Some Cool Climate Grains

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Abstract

In this study, It was determined that the effect of 5 different temperature degrees (5, 10, 15, 20 and 25 °C) on the germination of the 3 triticale varieties (Ege Yildizi, Umran Hanim and Truva), 3 wheat varieties (Sultan 95, Es 26 and Altay 2000) and 3 oat varieties (Checota, Yeniceri and Kirklar). The experimental design was a full factorial completely randomized experiment with 3 replications. In this research, germination percentage (%), average germination time, weight of coleoptile, weight of radicula, length of coleoptile, and length of radicula were determined. JMP 5.0. statistical software and LSD test were used. The germination rate is reduced by 15 ° C in all varieties and genotypes we have examined. At increasing temperatures, root, radicle and coleoptile lengths are increasing.

Keywords: Wheat, Triticale, Oat, Temperature, Germination

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The Population Fluctuation of Insects in Bean Fields, Malatya, Turkey

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Abstract

Population fluctuations of bean pests were identified in an unmanaged bean field in Battalgazi district of Malatya Province during 2016. Pest on leaves were counted weekly between June and December. Cicadellidae, Aphididae and Thripidae families were seen on bean leaves. In research, Neuroptera eggs and Coccinellidae were seen on leaves too. It was determined that there were numerous predators. Cicadellidae and Thripidae families were reported as the most abundant pest groups. Cicadellidae population was higher than Thripidae population. The highest population of Cicadellidae and Thripidae were observed on 19 July, 24 and 32 numbers of 25 leaves, respectively. On the other hand, the highest population of Aphididae was on 2 December 10 numbers of 25 leaves.

Keywords: Pests, bean, predators

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Effects of BAP Concentrations and Different Culture Medium on In Vitro Regeneration of Öküzgözü and Boğazkere Grapevine Varieties

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Abstract

This research was conducted to determine the type of medium and BAP concentrations to be used in tissue culture studies of Öküzgözü and Boğazkere which are important wine grapes of Turkey. The study in which 0.7-0.8 cm long shoot-tips obtained by single-node culture were used; was focused on four medium MS, DKW, QL and WPM and six different BAP concentrations 0.2 - 0.4 - 0.6 - 0.8 - 1.0 - 1.5 mg l⁻¹. Single-node grapevine explants to be used in culture initiation were cultured in MS medium and the medium was supplemented by 30 g l⁻¹ sucrose, 6 g l⁻¹ agar and 1 mg l⁻¹ BAP. The parameters of number of shoots per explant, shoot length (cm), number of nodes and callus rank were investigated in the study. MS medium gave the best results in terms of shoot number, shoot length and node number in both grapevine varieties. These values were found as 4.66, 1.24 and 6.39 in Öküzgözü and 6.28, 1.15 and 6.81 in Boğazkere, respectively. From the second week of DKW media culture, obscuration was occurred in shoots and there wasn't any further development observed after this stage. When number of shoots, shoot length, number of nodes and number of shoots shorter than 0.5 cm were evaluated together in terms of BAP concentrations must be used in medium, 0.6 mg l⁻¹ BAP concentration was concluded as suitable to be used for both grapevine varieties.

Keywords: Öküzgözü, Boğazkere, Micropropagation, Medium, Cytokinin

Study Of The Stability Of Sunflower Oil Enriched With Olive Phenolics Under Deep-Frying Condition

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Abstract

The objectives of this study were to research the efficacy of olive fruit (OFE), olive leaf (OLE) and olive pomace extracts (OPE) in frying conditions. Sunflower oil enriched with natural phenolic extracts (200 mg/kg oil) and fried at 180 ± 5 °C for three days and analyzed. The sunflower oil without phenolic extract was used as control. Evaluation was taken into consideration with determination of total phenolic content, free fatty acids (FFA), peroxide value (PV), K_{232} - K_{270} ultraviolet absorbance values and free radical scavenging activity. Generally, the lowest phenolic content and antioxidant capacity value were measured in OPE extract during deep-frying. The total phenol contents in the oils decreased as increasing the frying period, while FFA and PV significantly increased. K_{232} - K_{270} ultraviolet absorbance values for oil samples enriched with phenolic compounds and also for control samples increased generally for frying conditions by the time. The levels of conjugated dienes throughout the frying period are lowest in the oil with OFE. The results of this study show that natural phenolic extracts can enhance thermo-oxidative stability and shelf-life of vegetable oils. In addition, agricultural by-products such as olive leaf and olive pomace can be evaluated for regaining to food industry with health and economical benefits.

Keywords: *Enrichment, Frying, Olive Fruit, Olive Leaf, Olive Pomace, Oil Stability*



Morphogenetic, Ontogenetic and Diurnal Variability in Content and Constituents of Bitter Fennel (*Foeniculum vulgare* Miller var. *vulgare*) Essential Oil

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Abstract

The objective of this two-year study was to determine morphogenetic, ontogenetic and diurnal variability in essential oil content and its constituents of bitter fennel (*Foeniculum vulgare* Miller var. *vulgare*). Leaf and root-bulb-stalk samples taken at three stages (pre-flowering, full-flowering and post-flowering), flower samples picked up at full flowering and seed samples gathered at two seed growth stages (at the beginning of seed set and harvest maturity) were used to evaluate morphogenetic variability. To specify ontogenetic and diurnal (3 times a day) variability, whole plant samples were taken at pre-, full and post-flowering stages. Essential oil content was assessed with water distillation method using Clevenger apparatus and essential oil constituents were determined with GC-MS device. Essential oil contents ranged from 0.22% to 5.52%, with the lowest and the highest obtained from the root-bulb-stalk and seed samples, respectively. In the whole plant samples, essential oil content increased from 1.66% at pre-flowering to 2.21% at full-flowering and then decreased sharply to 0.79% at post-flowering. In terms of diurnal variability, percent essential oil ranged between 2.11% and 2.25% with the highest obtained from the samples taken at 1:00 pm. The compounds of trans-anethol (56.2%), methyl chavicol (13.3%), limonene (10.2%) and fenchone (9.8%) were of the highest amount found in whole plant essential oil. The highest amount of trans-anethol, methyl chavicol and fenchone was found to be in the seed samples, while the flower samples produced the highest amount of limonene.

Keywords: Bioactive compounds, GC-MS, methyl chavicol, trans-anethol, volatile oil



Extrusion Technology in Innovative Food Industry

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Abstract

Extrusion processes in the food industry which involves forcing mixed food ingredients through a die to produce food snacks. Extrusion technology, well-known in the plastics industry, has now become a widely used technology in the agri-food processing industry, where it is referred to as extrusion-cooking. This study includes extrusion principles and applications, food extruder types, process parameters and product quality. Food material is heated to its desired temperature with the help of inside shear energy, exerted by the rotating screw, and additional external heating of the extruder body. In this changed rheological properties the food is passed under high pressure through a series of dies and the product expands and dries to its final shape. Extrusion results in very different physical and chemical properties of the products compared to those of the raw materials used. Extrusion cooking is advantageous for perishable food and feed as exposure to high temperatures for only a short time will restrict undesired deterioration effects on food ingredients as starches, proteins, amino acids, antioxidants and vitamins. The Extruder is a food process reactor, in which the producer has created the prerequisites with the presence of certain one or two screw lay-out, extruder body heating and cooking capacity, the use of mixing equipments and the installed motor power specifications, to control a food and feed quality. Studies show that twin-screw extruder are more efficient than single-screw extruders because of better mixing and better handling of different combinations of food ingredients. This study will reveal that understanding and application of extrusion technology in Turkey and other developing countries are still far from being satisfactory and would serve as a reference for researchers and operators in food extrusion technology.

Keywords: Extruders, Food extrusion, Extrusion cooking

The Effects of Tillage on Soil Organic Matter, Nitrogen and Bulk Density in an Olive Orchard

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Abstract

The olive tree is one of the most valuable and widespread crops in the Aegean region. The adaptation of these trees is well suited to even barren, steep and stony soils. It is important to adapt a good soil management system to control the soil for a more sustainable, healthy and fertile land management. In recent years, the intensity in land use has led to significant changes in the organic carbon stock in agricultural soils. Intensive tillage causes a rapid oxidation of the soil organic carbon. However soil organic carbon is a very important parameter for the soil quality which regulates the soil water, the soil structure, the plant nutrients and the microbial activities. This study was conducted at the Fig Research Institute in Erbeyli- Aydın. The results of this study show the relation of soil organic matter content (%), nitrogen (%) and bulk density (g cm^{-3}) values from under the canopy, the tree crown projection and the rows between the trees obtained from 0-10 cm, 10-30 cm and 30-50 cm soil depths. The bulk density values showed no differences between the same soil depths but the most compacted zone is the 30-50 cm soil depth. The soil organic matter (%) content showed statistically higher values under the canopy whereas the highest values were in 0-10 cm soil depth. The total soil nitrogen amount showed higher values under the canopy in the 0-10 cm soil depth. The results show that the tillage reduces the soil organic matter content and nitrogen.

Keywords: Tillage, olive orchard, soil organic matter

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The Effects of Conventional Tillage on Some Physical and Chemical Properties in a Fig Orchard

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Abstract

Aydin city, which is located at the west side of Turkey, is one of the most important producers of fig in the world and the thumping majority of the fig producers in Turkey. Furthermore the most of the fruit trees in the Aegean region are found in Aydin province. Fig trees prefer hot, dry climates and they need often irrigation during some periods to prevent the fruit drop. The roots of the fig tree are close to the soil surface, and can dry out easily in hot or dry conditions. That`s why, it is very important to sustain good soil structure conditions for a better water holding capacity in the soil. The study was conducted at the Fig Research Institute in Erbeyli- Aydin. The aim of this present study was to find out the tillage effects (plough) on different soil depths under the canopy and the rows between the fig trees. The results showed that the bulk density (g cm^{-3}) values were significantly higher under the canopy in contrast to the rows between the trees in 0-10 cm, 10-30 cm and 30-50 cm soil depths. The mean soil organic matter (%) content showed higher values under the canopy in both macro and micro aggregates. There were no changes in the total nitrogen amount between the macro and micro aggregates whether under the canopy neither the rows between the trees in all soil depths. Ploughing between the trees showed a reducing effect on the soil organic matter content in the fig orchard.

Keywords: Tillage, fig orchard, soil organic carbon, bulk density



The Effect of Using Different Yoghurt Bacteria Strains on Sensorial Properties and Aroma Profile of Çökelek Cheese

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Abstract

Çökelek cheese is a traditional type of cheese usually consumed in rural areas of Turkey. The origin of milk used in production and differences in manufacturing practices cause some variations according to regions. It is known as Süt Koptu, Akkatik, Kesik, Torak, Urda, Süt Kirmasi, Jaji and its dried form is known as Çortan in different areas. Its popularity in Turkey is due to habits of Anatolian people and also its healthy composition. Çökelek cheese is a rich source of protein and calcium, since it has low fat and low calorie, it is a healthy ingredient of diet lists. It can be consumed in a variety of ways such as spread cheese in breakfast and as an ingredient of many recipes in Turkish kitchen. It is generally produced by diluting yoghurt in proper ratios and churning it for Yayık butter production. The Yayık Ayranı or buttermilk remained after churning is processed into Çökelek cheese by heat precipitation. The precipitate is drained for removal of excess water. After salt addition and kneading, cheese is packaged in plastic containers and stored at 4°C. Since Çökelek cheese is produced by using yogurt its aroma and flavor differ from other cheeses. Thermophilic yoghurt bacteria are responsible for its aroma and flavor. The aim of this study is to determine superior aroma producing strains and to observe possibility of using different yoghurt bacteria strains in Çökelek cheese production. For this purpose, sensorial properties, aroma profile and chemical attributes of the samples produced from four yoghurt bacteria combination are examined in the 1st, 15th and 30th days of storage.

Keywords: Çökelek cheese, Aroma profile, Sensory properties, Ripening index.

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Effect of provenance on morphological properties of Anatolian Black pine seedlings

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Abstract

The purpose of this study was to compare the morphological characteristics of two years old Anatolian black pine (*Pinus nigra* Arn. subsp. *pallasiana* (Lamb.) Holmboe) seedlings originating from three seed stands growing at the Denizli Forest Nursery. The seedlings were lifted at the beginning of December. The seedling height, root collar diameter, bud length, number of lateral branch, shoot dry weight, root dry weight and shoot:root ratios (dry weight) were determined. The statistically significant effect of provenance on seedling morphology except for lateral branch number was found. The seedling height and root collar diameter were varied from 10.9 to 14.6 cm and 3.4 to 4.7 mm, respectively. The highest seedling height, root collar diameter, bud length and shoot dry weight were obtained from Denizli-Buldan provenance. All provenances were evaluated separately according to the Turkish Standards (TS2265/Feb. 1988) and Uşak-Catak origin has the highest value as to Ist quality classes than the others.

Keywords: *Pinus nigra*, height, root collar diameter, shoot dry weight, seedling



Water Utilization in Landscape Architecture

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Abstract

Water is one of the most necessary and effective elements of human life. It is the main element both biological, physical and psychological aspects of the living environment. Water throughout history was used as moving or stagnating that was variable according to many factors such as climate, geography, culture etc. The first priority for water utilization had been functional in terms of meeting the water needs of the settlement areas, vital activities such as irrigation of agricultural lands, economic reasons, and aridity of the climate. The waters brought by the channels from the remote areas of the city were later used as demonstrations in open channels and pools and then the aesthetic dimension of the water was being considered. The use of monumental fountains, water bowls, waterfalls and streamlets in landscaping were increased. At the core of water-related designs were always the factors of movement and calmness. Today, water is an important landscape material in urban open and green areas. It is used in landscape designs with its aesthetic and functional features such as active and passive recreational use, focal point, cooling, directing / supporting circulation, image and sound screening. In this study, the use of water as a landscape design element from the past to the present has been put forward with examples.

Keywords: Landscape design, Water usage, Historical landscape

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Assessment of Iğdır Plain Agricultural Soils: Soil Fertility

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Abstract

Soil fertility is one of the factors controlling plant growth. The nutrient level of soils is the most important indicator of soil fertility. Organic Matter and Calcium Carbonate (CaCO₃) content are important to give an idea of the nutrient level and the nutrient supply capacity of the soil to the plants. In this study situation of Iğdir plain in terms of organic matter, CaCO₃, total nitrogen, phosphorous, and potassium contents have tried to put forward. For this purpose, 326 soil samples were taken from 0-30 cm the Iğdir plain. The organic matter (OM) of the soil was performed by using the Walkley-Black method and total nitrogen is obtained from organic matter values. CaCO₃ content was determined according to scheibler calcimeter method. Phosphorus (P) content was determined by sodium bicarbonate (NaHCO₃) extraction and subsequent spectrophotometry. Exchangeable potassium (K) was determined using an ammonium acetate extraction followed by the atomic absorption method. According to the analysis result OM was found to be insufficient in 57% of soil samples. In terms of available phosphorus, 67% of the soil samples was in the low and very low. The results of the analysis revealed that there is no problem in terms of calcium carbonate and exchangeable potassium. It is necessary to apply short and long term plans in order to get better quality and more products. For solution, such as the introduction of crops, leguminous plants, that will provide nitrogen to the soil into the plant production system, encouraging the use of organic fertilizers, the reduction of excess water used by farmers, can be listed as the main applications.

Keywords: Soil Fertility, Soil Analysis, Soil Organic Matter, Plant Nutrients

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Phenolic Compounds And Their Role in The Biological System

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Abstract

Phenolic compounds are essential metabolites found in plants, fruits and vegetables. Thousands of phenolic substances have been identified in different plant species. Phenolic compounds, mostly found in plants are examined in two groups according to carbon skeletal structure; Phenolic acids (such as Gallic acid, p-hydroxybenzoic acid, cinnamic acid, p-coumaric acid, ferulic acid, caffeic acid) and flavanoids (such as flavones, flavoneller, flavonons, catechins anthocyanins and calcones). A diet rich in fruits and vegetables contains a high-level phenolic compound (up to 1 gram per day). Once taken in the body, these compounds are metabolized in the small intestine and liver by subjecting them to basic conjugation reactions such as methylation, glucuronidation, and sulfation. Thus, while detoxification is provided for potential toxic effects, their hydrophilicity is enhanced to facilitate removal from the body through bile and urine. Glucosylated, sulfated and methylated metabolites in the circulation are transported to the albumin-bound and metabolic activities change. For this reason, while it is reported that phenolic compounds are speculative about the molecular interactions in biological systems, many researches have revealed that phenolic compounds found have antitumor, antimicrobial, antioxidant properties, cardiovascular and neuroprotective effects and they mitigate the accumulation and destructive effects of chronic heavy metals such as lead, which on haematological system and soft tissues. Phenolic compounds exhibit these effects by a- Non-specific mechanisms; (Free radical scavenger and metal binding effect, interaction with membranes) b- Specific mechanisms (interaction with enzymes, transcription factors and receptors). However, the negative effects of phenolic compounds can not be completely ruled out. For this reason, limiting the consumption of phenolic compounds is recommended.

Keywords: Phenolic compounds, biological system

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Water Saving and Irrigation Water Pricing Approaches in Agriculture

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Abstract

Decreasing available water resources in the face of increasing water demand in the world makes it necessary to prevent excessive water use. As in many countries, most of the water is also used for agriculture in Turkey. Despite the use of excess water in agriculture, high yields cannot be obtained due to high water losses. Measures can be taken for water saving in agriculture such as application of pressure irrigation methods, establishment of closed water conveyance and distribution systems, use of treated wastewater, harvest of rain water, farmers training. Pricing of irrigation water is the most important tool, especially in preventing excessive water use. In the studies conducted, it was determined that the water is overused than used as needed in the irrigation schemes, which the farmers are given water free of charge. At the 1992 Dublin Conference, it was accepted that water was a commodity and that it should have a price. Since then, the price of irrigation water has been determined in different ways in each country. In this study; Water saving in agriculture and irrigation water pricing approaches are discussed.

Keywords: water saving in agriculture, irrigation water pricing approaches, pressurized irrigation, irrigation with wastewater, rainwater harvest.

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SCIENCES AND TECHNOLOGIES

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Supports Provided to Irrigation Systems in Turkey

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Abstract

Changes in the amount and distribution of rainfall in the world due to the global warming limit the usable water resources. As in developing countries, most of the water in our country is also used in agriculture. In the 21st century, the effective use of water resources and the necessity of getting more crops per every drop of water has come to the agenda. The use of pressurized irrigation systems which provide water saving in agriculture and make it possible to irrigate larger areas with the same water is recommended. For this purpose, the establishment of pressure irrigation systems has been supported by the Ministry of Food, Agriculture and Livestock since 2006. In this study, the support given to the pressurized irrigation systems by the Ministry of Food, Agriculture and Livestock was evaluated, problems and solution proposals were given.

Keywords: Sprinkler irrigation, drip irrigation, irrigation supports, Turkey

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The effectiveness of wheat straw mulching on controlling of soil surface runoff and soil loss as an indicator of the water erosion

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Abstract

Management of soil surface condition is very important to control of soil erosion. Various cultural, vegetal and technical methods can be used to manage soil surface conditions. The most commonly used method for the management of the soil surface is to apply of crop residues as mulch because of its easy and cheap availability in abundance, easy application to the soil surface. This study aims to determine effectiveness of different rates (0, 250, 500, 750 and 1000 kg.da⁻¹) of wheat straw mulch for controlling surface runoff and soil loss due to the water erosion under simulated rainfall condition in laboratory. For this purpose, soil samples were taken from the 0-15 cm soil depth of the four cultivated fields in Bursa province and were placed in the experimental trays. After spreading wheat straw mulch on soil in experimental trays, simulated rainfall with the intensity of 55-58 mm.h⁻¹ was applied on experimental trays. According to our results, significant differences (p<0.01) in terms of surface runoff and soil loss were found for soil type, mulch rate and soil type and mulch rate interaction. Compare to control application, 500 kg.da⁻¹ mulch application decreased the soil loss by 97.9 % while 750 kg.da⁻¹ mulch application reduced the surface runoff by 93.1%. It can be recommended that 500 kg da⁻¹ wheat straw mulch should be applied in order to control soil and surface runoff losses in areas vulnerable to erosion.

Keywords: Erosion control, wheat straw mulch, surface runoff, soil loss, simulated rainfall

***Vaccinium myrtillus* L. extract can inhibit the oxidative stress in diabetic rats' spleen tissue**

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Abstract

Bilberries are any of several primarily Eurasian species of low-growing shrubs in the genus *Vaccinium* (family Ericaceae), bearing edible, nearly black berries. The species most often referred to is *Vaccinium myrtillus* L., but there are several other closely related species. *Vaccinium myrtillus* L. is a traditional Eurasian medicine that has been used in the treatment of diabetes. However, the mechanism of *Vaccinium myrtillus* L. activity is still unclear. This study aims to examine the effect of *Vaccinium myrtillus* L. on the oxidative stress in spleen tissues of experimental diabetic rats. In this study, 28 rats were disturbed into 4 different groups. Group I was control group, group II was diabetes group which was administered single dose of streptozotocin (45 mg/ kg), in Group III, rats were not made diabetic but given extract of *Vaccinium myrtillus* L. (1.2 g/kg) by gavage for 21 days; Group IV rats were made diabetic and given extract of *Vaccinium myrtillus* L. (1.2 g/kg) by gavage for 21 days. After these practices, all the animals were sacrificed, and the spleen tissues of each animal were isolated. These tissues were homogenized and superoxide dismutase (SOD), catalase (CAT) activities and malondialdehyde (MDA) and glutathione (GSH) levels were examined. According to our results, MDA levels increased, CAT, SOD activities and GSH level decreased in group II comparing with group I ($p<0.05$). Furthermore, MDA levels decreased, CAT, SOD activities and GSH level increased in group IV comparing with group II ($p<0.05$). According to these results, it can be suggested that *Vaccinium myrtillus* L. was found to reduce the oxidative stress. As a result, we can suggest that extract of *Vaccinium myrtillus* L. may be used for the treatment of diabetes.

Keywords: *Vaccinium myrtillus* L., diabetes, spleen, oxidative stress



Isolation, Identification and Characterization of Plant Growth Promoting Rhizobacteria from Cotton Plants

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Abstract

Cotton crop is considered as the most economical industrial crop in Hatay province of Turkey. Overall objective of this study was to isolate and characterize plant growth promoting rhizobacteria (PGPR) from cotton plant rhizospheres that can be used as biofertiliser. Several healthy cotton plant samples from ten different locations in Hatay province were collected for bacterial isolation. A total of 35 different bacterial isolates were obtained and subsequently identified using morphological and MALDI-TOF analyses. Characterization of plant growth promoting potentials of each bacterial isolate were determined using phosphatase solubilization, siderophore production, seed germination and seedling development tests. Among these isolates 12 PGPR isolates (*Arthrobacter aurescens* CEP7/6, *Bacillus endophyticus* CEP6/6, *Bacillus pumilus* CEP10/11, CEP10/1, CEP10/12, *Bacillus megaterium* CEP10/2, CEP7/4, *Micrococcus luteus* CEP6/1, CEP10/6 and *Pseudomonas brassicacearum* CEP10/7, CEP4/8, CEP6/2) showed multiple attributes and demonstrated plant growth promotion properties through cotton-based bioassays *in vivo* and *in vitro* conditions. These bacterial isolates were found to result in significant increase in seed germination, root, shoot length and biomass of tested cotton cultivar. These isolates also produced siderophore and solubilized phosphate *in vitro* conditions. Although three isolates (*Pseudomonas brassicacearum* CEP8/6, CEP10/3, CEP10/5) produced positive result for both siderophore and phosphate solubilisation test, these isolates completely inhibited germination of treated cotton seeds. Overall results of this study suggest that efficient PGPR bacterial isolates can be further formulated and used as biofertilization agents in cotton production by coating seeds prior to sowing.

Keywords: Cotton, PGPR, Endophytic and of Epiphytic bacteria, biofertilization.



Determination of Recreational Potential of Limni Lake Nature Park

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Abstract

Rapidly developing industry and urbanization cause disturbance of the environment. Without a doubt, this process has negative effects on all living beings. Conversion of the existing natural areas to the areas which can meet various needs of people in addition to the organisms living in that area by taking such natural areas under conservation is of great importance for our world. This study was conducted in order to determine the recreational potential of Limni Lake Nature Park which is located within the borders of Gümüşhane Province. The method for evaluation of recreational potential in forests developed by Gülez in 1990 was utilized in the study. It was found that Limni Lake Nature Park has a high recreational potential due to factors such as being located near the main transportation ways, its flora and fauna, fresh air, vista spots within the area, diversity or tourism options in the surrounding areas and its positive effect on human health. The study proposed recommendations regarding improvement of various elements existing in the area which can be changed by human craft, and drew attention to recreational potential of the area in the future.

Keywords: Limni Lake Nature Park, Recreational Potential, Gümüşhane

Square-Wave Adsorptive Stripping Voltammetric Method for the Selective and Simultaneous Determination of Vanillin and Caffeine in the Commercial Food Samples using a Boron-doped Diamond Electrode

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Abstract

Herein, a simple and sensitive voltammetric method was developed for the simultaneous determination of vanillin (VAN) and caffeine (CAF) in aqueous media (phosphate buffer, pH 2.5) on a anodically pre-treated boron-doped diamond (BDD) electrode using square-wave voltammetry (SWV). Using CV with the anodically pre-treated BDD electrode, a separation of about 360 mV between the peak oxidation potentials of VAN and CAF present in binary mixtures was obtained. The dependence of peak current and potential on pH, scan rate, accumulation parameters and SWV parameters were studied. By using square-wave mode after 60 s accumulation under open-circuit voltage, the calibration curves for the simultaneous determination of VAN and CAF showed an excellent linear response, ranging from 1.0 $\mu\text{g mL}^{-1}$ to 100.0 $\mu\text{g mL}^{-1}$ for both compounds. The limits of detection were 0.234 $\mu\text{g mL}^{-1}$ ($1.54 \times 10^{-6} \text{ mol L}^{-1}$) for VAN, and 0.071 $\mu\text{g mL}^{-1}$ ($3.66 \times 10^{-7} \text{ mol L}^{-1}$) for CAF. The proposed method was successfully applied in the single and simultaneous determination of VAN and CAF in the commercial food samples, with results similar to those obtained using the developed high-performance liquid chromatography (HPLC) method.

Keywords: Caffeine; Vanillin; Boron-doped diamond electrode; Simultaneous determination; Commercial food samples

Electrochemical Behavior of Ellagic Acid at a Boron-doped Diamond Electrode and Its Determination by Square-wave Adsorptive Stripping Voltammetry in the Foodstuffs

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Abstract

Ellagic acid (EA, 2, 3, 7, 8-tetrahydroxy-chromeno [5, 4, 3-cde] chromene-5, 10-dione) is a powerful bioactive compound with many potential pharmacological and industrial applications. Presently, the main sources of EA is walnut (*Juglans nigra*), chestnut (*Castanea sativa*) and oak (*Quercus robur*, *Q. alba*) trees. Berry fruits are the other sources of ellagitannins and EA, including blackberry (*Rubus occidentalis*), raspberry (*Rubus idaeus*), strawberry (*Fragaria ananassa*), and fruit, e.g. pomegranate (*Punica granatum L.*). EA has been associated with health improvement through its anti-carcinogenic action. In addition, it has been shown to have potent antibacterial and antiparasitic activities [1-3]. A method for the determination of antioxidant and anticarcinogenic agent EA was developed by adsorptive stripping voltammetry. Its determination was carried out at the anodically pre-treated boron-doped diamond in aqueous solutions. Using square-wave stripping mode, the compound yielded a well-defined voltammetric response in phosphate buffer, pH 7.4 at about +0.5 V (vs. Ag/AgCl) (a pre-concentration step being carried out at open-circuit condition for 30 s). A linear calibration graph was obtained in the concentration range of 0.5 to 25.0 $\mu\text{g mL}^{-1}$ (1.65×10^{-6} - 8.27×10^{-5} mol L⁻¹). A detection limit of 0.094 $\mu\text{g mL}^{-1}$ (3.11×10^{-7} mol L⁻¹), and relative standard deviation of 7.75% for a concentration level of 0.5 $\mu\text{g mL}^{-1}$ ($n = 7$) were calculated. As an example, the practical applicability of the propose method was tested for the determination of this agent in the some foodstuffs.

Keywords: Ellagiz acid; Boron-doped diamond electrode; Square-wave adsorptive stripping voltammetry; Foodstuffs

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Molasses (Pekmez) as a Traditional Taste

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Abstract

Molasses is a traditional Turkish food which is produced from the fruit juices containing high amounts of sugar such as grape, apple, carob, plum, watermelon, apricot, sugar beet and fig. It is named after the fruit from which it is obtained (i.e., grape molasses, mulberry molasses). Molasses is a very important food product for human nutrition especially for babies, children, and sportsmen and in situations demanding urgent energy due to containing high amounts of sugar, mineral, and organic acid. It easily passes into the blood without digestion owing to most of its carbohydrate is in the form of monosaccharide like glucose and fructose. In molasses, glucose and fructose are the main source of its energy value. The minor components of molasses are protein, amino acids, and polyphenols. Molasses have positive effects on health due to antioxidant and antimutagenic properties of polyphenols. Color of molasses is an important quality attribute. During processing or storage, very dark brown colors can develop due to either Maillard or caramelization reactions. It is a generally concentrated and shelf-life extended form of fruit juice produced by boiling without the addition of sugar or other food additives but, the production techniques of molasses can be different from each other considering species of fruits used in production. Generally, two types of molasses are produced as liquid and solid. Liquid molasses contains a minimum of 65% total soluble solids. Solid molasses is also produced by adding some solidifying and bleaching agents to liquid molasses. The typical process of liquid molasses involves washing, crushing, pressing, deacidification by molasses earth, separation, clarification and concentration by boiling with molasses earth, packaging and storing of obtained molasses. Molasses is a healthy sweet food because of its nutritional component, but its production technology should be standardized and the safety and quality of final product would be improved.

Keywords: health, molasses, production.



Calculation of Spirulina (*Spirulina platensis*) Production Chemical Ratios by Developing New Software

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Abstract

Spirulina is a microscopic alga that contains rich proteins, minerals, vitamins, essential amino acids and essential fatty acids like γ -linolenic acid (GLA). It is produced for different industries such as food or medicine and sold as a natural supplement around the world. In laboratory conditions lots of chemicals are using for production. These chemicals are sodium bicarbonate, sodium carbonate, potassium phosphate, sodium nitrate, potassium sulphate, sodium chloride, magnesium sulphate, calcium chloride, iron sulphate and EDTA. As a result of the necessity of critical calculations of these chemicals, there is a need to develop software for spirulina production which is one of the most important problems of this sector. Microsoft Visual Basic6 program was used in writing a computer program to plan the daily work to be done, chemical calculations, laboratory conditions and to control financial affairs in Spirulina farm. Microsoft Access program was also used as a database. In software, alga ponds, the amount of algas and planting date is firstly defined as computer data from the "Information Input" menu. Based on these definitions, the program can calculate the harvest of algas, chemical ratios for planting and cost of chemicals. The software was tested by a big spirulina farm in Adana of Turkey and seen that it can be use for anyone who wants to product Spirulina.

Keywords: Spirulina production software, Spirulina chemical ratios



Tasting Sensory Analyse Of Mixed Cooked Rainbow Trout (*Oncorhynchus mykiss*) Caviar And Chicken Egg

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Abstract

The demand for animal protein for human consumption is currently on the rise and aquaculture has been an important source of fish available for human consumption. The aim of this study was to test the eatable of cooked caviar and chicken egg mixture. For fish caviar samples, aquacultured rainbow trout (*Oncorhynchus mykiss*) was obtained from an aquaculture farm located on river Ecemis in the southern (Camardı, Nigde, Turkey) in January 2016. The average weight and length of the adult fish samples were $2,6 \pm 7.6$ kg and 40 ± 2 cm. Sensory analyse (odour, flavour and eatable) was assessed according to Torry Scheme with modifications. A scale from 10 to 3 was used, 10 denoting absolutely delicious and 3 indicating a spoiled, putrid egg. Trout caviar was made after washing, salting and alcohol addition. To prepare the cooked mix sample, fish and chicken eggs samples were cooked in a frying pan for 3 minutes at medium temperature. Fish caviar to chicken egg ratio was 1:1 (w/w). The cooked samples were served hot to panellists. Assessment was carried out by 20 trained panellist. Results showed that flavour and eatable characteristics of the eggs were strong but odour characteristics were not too strong as others. General opinions of panelist showed that trout caviar and chicken egg mixture is eatenable but it's salt ratio is a bit more.

Keywords: Rainbow trout, Trout caviar

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Technical Textiles for Agricultural Applications

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Abstract

Agricultural textile product groups, agro textiles, are innovative products that are designed specially for the agricultural applications and practices. Increasing population of the world causes intensive stress on the agricultural crops and requires increased yield and quality of agro-products. To reply the increasing crop demand agro processing sector has experienced expansion during the last 5 decades, starting with simple domestic/cottage level textile based solution and continuing with advanced fiber and textile technologies at industrial level currently. Agricultural textile products help to reply the urgency of the agricultural crops demand with their excellent environmental resistance, mechanical properties, easy process ability and durability characteristics. Agro textiles provides multidimensional solutions to the variety of agro industry problems with the advantages of flexible, light, strong, long lasting and other specific properties textile structures. This study has been focused on the technical information and market potential of the agricultural textile where it has already reached up to the 8% of the technical textile market in the world.

Keywords: Agricultural textiles, fiber, sheet, net, web, woven fabric, knitted fabric



Optimization of Process Conditions and the Quantity of Bulgur Flour in African Couscous Production

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Abstract

Couscous, a world-wide known traditional cereal product, which is a staple food of North Africa and Middle East cuisines. It can be consumed as salad (tabulleh) and side dish with chicken and meat meals, as an alternative for pilaf. Depending on the formulation, processing technique and usage, there are three couscous types such as Turkish, Arabic/African and short-cut pasta types. African/Arabic type couscous is produced traditionally by agglomeration of *Triticum durum* semolina with water by hand. The aims of this study are; to produce African/Arabic type couscous by substitution of semolina with undersize bulgur (bulgur flour); to find optimum quantity of bulgur flour and drying conditions. In order to determine the optimum processing parameters and recipes; 0, 25 and 50 % of bulgur containing couscous samples were prepared. In the study, color, yield, sensory properties, were determined. In the study, two different types of dryer e.g. packed bed and microwave were used. Optimum parameters were predicted as 50 % of bulgur flour for packed bed (60°C) and microwave (180 W) drying operations with 50 % (w/w) of water according to yields, color (L*, a*, b*) values and sensory properties (color, odor, general appearance). For packed bed drying at 60 °C yields were 54.28±3.78, 47.70±1.73 and 52.57±7.04 % for 0, 25 and 50 % bulgur flour containing couscous samples, respectively. For microwave drying at power intensity of 180 W, the yields were 48.26±1.92, 52.56±0.96 and 51.36±3.03 % for the couscous consisting quantity of 0, 25 and 50 %, respectively. Lightness (L*) values of couscous samples were decreased with increasing the quantity of bulgur flour after both drying processes.

Keywords: couscous, bulgur flour, undersize bulgur

Influence of *Pseudomonas* sp. Isolates on Plant Growth and Soil Enzyme Activities

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Abstract

The aims of this study were (i) to isolate *Pseudomonas* sp. from the rhizosphere of pea plant Turkey; (ii) to screen these isolates in vitro for effect plant growth. The soil samples were collected from rhizosphere of healthy pea plants. The identification of isolates relied on standard biochemical and physiological tests according to the classification of Bergey's. The tests characterizing the genus *Pseudomonas* were carried out in triplicate. Gram stain, motility, spore formation, catalase test, oxidase test and reduction nitrate to nitrite. Seven isolates of *Pseudomonas* sp. were assessed for their effect upon pea growth. Isolate B6 and BA15 significantly increased the root weights by 47 % and 65 %, respectively. Isolates B15, B6 and M5 resulted in significantly greater root lengths. Soil enzyme activities were used to investigate the ecological impact of isolates (B6, BA15, B4, M5, B17, B16 and D11) in the rhizosphere soil of pea. Isolates had no effect on enzyme activities in the rhizosphere soil.

Keywords: *Pseudomonas*, isolate, pea, plant growth

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Effects of Biofertilizer Containing Arbuscular Mycorrhizal Fungi on Triticale Growth

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Abstract

The objective of this work was to evaluate the effects of two biofertilizers containing an arbuscular mycorrhizal fungus on soil properties and the growth of triticale (*xTriticosecale* Wittmack). The application treatments included control (no fertilizer) chemical fertilizer and two mycorrhizal fungi. The applications of biofertilizers containing mycorrhizal fungus significantly increased the growth of triticale than control and chemical fertilizer treatments.

Keywords: Triticale, plant growth, mycorrhizal fungus

Antimicrobial Activities of Some Medicinal Plants in Turkey

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Abstract

In this study, acetone, alcohol and hexane extracts *Aloysia triphylla*, *Mentha aquatica*, *Foeniculum vulgare*, *Calendula officinalis*, *Salvia officinalis* and *Rumex acetosa* used for medicinal purpose in Turkey were tested for antimicrobial activity by the diffusion method. These extract were examined on *Staphylococcus aureus* NRRL-B 767, *Micrococcus luteus*, *Bacillus subtilis* NRS-744, *B.cereus* ATCC 11778, *Escherichia coli* ATCC 25922, *Listeria monocytopenus* ATCC 7644, *Klebsiella pneumoniae*, *Yersinia enterocolitica*, *Proteus vulgaris*, *Enterococcus faecalis* ATCC 29212, *Xanthomonas phaseoli*, *Pseudomonas fluorescens*, *Fusarium oxysporum*, *F.culmorum*, *F.avenaceum*, *F.moniliforme*, *Gaeumannomyces graminis* var. *tritici*, *Alternaria citri* and *Trichoderma harzianum*. As conclusion, extracts of *Aloysia triphylla*, *Mentha aquatica*, *Foeniculum vulgare*, *Calendula officinalis*, *Salvia officinalis* and *Rumex acetosa* inhibited the growth of microorganisms used in these tests at different ratios. We have found that acetone extracts of tested plants relealed antimicrobial activity against bacteria but it had no antimicrobial activity against fungi used in this study.

Keywords: Antimicrobial Activity, Microorganism, Medicinal plants

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Effects of Various Edible Film Coatings on Quality and Shelf Life of Sweet Cherries: A Review

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Abstract

Sweet cherries are highly perishable fruits and have short shelf life. For this reason considerable changes in quality are taking place during storage periods. Several technologies have been used to maintaining the quality and extending shelf life of sweet cherries after harvested. Among these technologies, the use of edible film coating has been reported to be effective. Edible film coatings can improve shelf life of sweet cherries by providing selective barrier for oxygen, carbon dioxide and aroma components. Besides, they can play an important role in the improvement of mechanical properties and the transport of important food components such as antioxidants and antimicrobials. For these purpose, a wide variety of coating materials such as alginate, *Aloe vera* gel, chitosan, shellac and whey protein isolate can be used. On the basis of experimental studies it has been seen that edible film coatings can extend the shelf life of cherries up to 15 days. In this study, it was aimed to review the applications of edible coatings and to discuss their effects on quality and shelf life of sweet cherries.

Keywords: Sweet cherry, Edible film coating, Shelf life



Some Abnormal Effects of Extreme High and Low Temperatures on Fruit Trees

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Abstract

Climate is one of the essential factors affecting agricultural production. In climate components, especially temperature plays important role in plant growth and development. Plants are under direct or indirect impact of temperature in terms of both growth and development in their whole life cycle from seed germination until the end. Particularly very low and very high temperature levels effect plant growth and development significantly. Extreme high and low temperatures can cause some physiological, morphological and molecular alterations in horticulture plants. These alterations yield structural and formal deteriorations in plant parts such as shoot, flower and fruit. In this study, a good many of abnormal formations which are thought to be caused by extreme high and low temperatures have been determined generally in shoots, flowers and fruits of some fruit species since 2000. These abnormal formations were visually recorded and the reasons of those anomalies were investigated by analyzing of those records. As a result, it was concluded that those abnormal formations were not permanent and adverse temperature conditions induced expression of wide range of genes.

Keywords: Fruit, Shoot, Flower, Abnormal formation, Temperature



Comparison of reactions of tomato seedlings with different true leaf stages to *M. Incognita*

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Abstract

Tomato is one of the most important vegetables cultivated in the world. Root-knot nematodes (*Meloidogyne* spp.) attack a wide range of plants including vegetables crops such as tomato, pepper, and cucumber. One of the best management methods against root-knot nematodes is using resistant varieties. Nematode resistance in tomato is mediated by a single dominant gene, *Mi-1*. Bioassays are widely used for identification of *Mi-1* gene in tomato breeding programs. However, the stage of seedlings is important for bioassays. In this study, the comparison of reactions of tomato seedlings with different true leaf stages to *Meloidogyne incognita* isolate S6 was examined under controlled conditions. Our findings showed that the stages of seedling are important for root-knot tests and tomato seedlings with four true leaf stages are the best convenient for bioassay. Our findings can be used in root-knot nematode tests in tomato breeding.

Keywords: Bioassay, *Meloidogyne incognita*, Seedling stage

Determination of edible oil quality of the safflower plant seeds and comparison with standards

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Abstract

Safflower (*Carthamus tinctorius*) is an oil seed used for edible oil production and its cultivation has been increasing throughout the world in last decades. Safflower has several advantages in comparison with other oil seeds. Although studies have shown that safflower seed oil has similar properties with olive oil, sunflower and peanut oil, due to its dominant characteristics over other plants such as tolerance for cold weather conditions, salinity and plantation in arid and semi-arid zones, it can be an alternative oil source to supply oil demand. As fatty acid composition is an important quality factor, high linoleic acid content (63-72 %) of safflower oil proves its appropriateness as an edible oil. In this study, quality and physicochemical properties of oil were determined for the seeds of safflower plants cultivated in different ways. Its suitability as edible oil in comparison with oil quality standards (Turkish Food Codex) and commercially available safflower oil produced by cold press technique were investigated. In the laboratory studies, soxhlet extraction method was employed for production of oil from safflower seeds using n-hexane as solvent. Quality and physicochemical oil analyses were applied to the safflower oils extracted. Fatty acid and sterol compositions, acidity and peroxide values, density, refractive index, iodine and saponification values were determined and compared with standards (Turkish Food Codex). The quality of safflower oils agreed well with the standards. *This study was supported by a TÜBİTAK-1003 project (Project No.114Y500).*

Keywords: Safflower, edible oil quality, treated wastewater

Isolation and Molecular Characterization of Xylanase Producing Yeasts from Tree Bark

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Abstract

Depletion of fossil fuels and damages on the environment such as pollution, toxicity, and greenhouse gas emission caused by fossil fuel use lead us to search for alternative energy sources like bioethanol. Plant cells are surrounded by a polysaccharide-rich extracellular matrix called as the cell wall. Lignocellulose is the major component of biomass constituting about half of the plant substance via photosynthesis. Since it's wide availability and low cost, lignocellulosic biomass has become a potential renewable source for bioethanol production. This biomass consists of three kinds of polymers known as cellulose, hemicellulose and lignin. Xylan is the second most abundant polysaccharide in plants after cellulose and is the major part of hemicellulose in hardwood. Xylanases play an important role in decomposition of the hemicellulose. Without any pretreatment, hydrolysis of lignocellulosic biomass can yield less than 20% of total sugar. However, the hydrolysis rate can be increased up to 90% depends on the enzymatic pretreatment techniques applied and the release of xylose increases the yield of bioethanol production dramatically. In the paper and pulp industry, enzymatic bleaching of kraft pulp is also achieved by xylanases offering an alternative ecofriendly way via elimination of chlorinated organic compounds with toxic and mutagenic effects that resulted from chemical bleaching. Furthermore, xylanolytic enzymes possess diversified application in numerous fields including food and feed industry, pharmaceutical industry and baking industry thereby preventing the environment from negative impacts of biotechnological processes. A wide variety of microorganisms comprising bacteria, yeasts, and fungi, have capacity to produce xylanases. Thus, we aimed to isolate and identify xylanase producing yeast strains from different tree barks in order to find new xylan degrading enzymes fulfilling the requirements of different industrial processes. Screening of extracellular xylanase activity was carried out on xylan agar plates and thirteen yeast isolates were found positive. Molecular identification of selected yeast strains was achieved through the sequencing analysis of both ITS1-5.8S-ITS2 rDNA and D1/D2 domain of 26S rDNA regions. The resultant yeast species were designated as *Cryptococcus laurentii* (7), *Cryptococcus terrestris* (1), *Candida blattae* (1), *Debaryomyces hansenii* (1), *Trichosporon moniliiforme* (1), *Debaryomyces sp.*(1) and *Meyerozyma sp.* (1). Using the best xylanase producer yeast species with highest clearing zone around the colonies, submerged fermentation (SmF) was performed in the medium supplemented with 1% beechwood xylan. Samples were withdrawn from the fermentation medium after 3, 5 and 7 day incubation for determination of optimal enzyme production and activity.

Keywords: Xylanolytic yeasts, isolation, xylanase, 26S rDNA, ITS1-5.8S-ITS2 rDNA



Effects of Organic Wastes Applications on Dehydrogenase Activity in Soils Having Different pH Levels

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Abstract

This study was carried out to determine the effects of rice husk compost, town waste compost and tobacco waste applications on soil dehydrogenase enzyme activity in soils having different pH levels under greenhouse conditions. Soil samples used in this study were taken from (0-20 cm) depth of soil surface of the fields around Samsun. Soil samples are moderately fine, fine and moderate in texture, acidic, neutral and alkaline in pH, low in salt content, low and moderate in organic matter level, low and high in lime content. In the study carried out in split split plot experimental design, rice husk compost, town waste compost and tobacco waste were applied into soils at four doses (0, 2.5, 5.0 and 7.5%) with two replications. After a month of incubation period, plants were grown in prepared media. According to analyses and evaluation of the results, it was determined that applications of rice husk compost, town waste compost and tobacco waste into acidic (Tepecik), neutral (Kampüs) and alkaline (Çetinkaya) soils increased dehydrogenase enzyme activity of soils. Tobacco waste in acidic Tepecik soil and town waste in alkaline Çetinkaya soil were more effective applications on dehydrogenase activity of soil. While dehydrogenase activity in acidic soil increased with increasing application dose, dehydrogenase activity in alkaline and neutral soils decreased with high organic waste application doses. It was observed that effectiveness of soil conditioner changed depend on acid, neutral or alkaline soil reaction status with application dose and material property of organic waste.

Keywords: Dehydrogenase, Enzyme, Organic waste, Soil properties, pH



Kinetic Modelling for Fucoxanthin Production

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Abstract

Fucoxanthin is a brown-orange pigment that can be found in many algae species. It has strong health effects like anti-obesity, anti-inflammation, cardiovascular system protection etc. Also its usage is common in food industry as feed additive and coloring agent. *Phaeodactylum tricornutum* is a microalgae which carries fucoxanthin as its major carotenoid. It can be cultivated easily with cultivation systems under optimum conditions. For the determination of cell growth kinetics, product formation and cell behavior, kinetic modelling could be performed. In this study, kinetic modelling of cell growth and fucoxanthin production from *P. tricornutum* was aimed. Firstly, microalgae was cultivated in a flat plate photobioreactor and cell concentration and fucoxanthin amount were analyzed. Furthermore, the rate of biomass and product formation were modeled with Monod and Luedeking-Piret models that are based on three different parameters as light intensity, substrate concentration and both of them. As a result, estimated cell concentration and fucoxanthin amount were very close to the experimental results. But kinetic parameters have shown changes according to model types. At the model as a function of light intensity, fucoxanthin yield was much higher than experimental results. At the second model as a function of substrate concentration, specific growth rate was much lower than the results. The best datas were obtained from the model as a function of multiple factors (light and substrate) Finally, for the determination of biomass and product formation substrate concentration and light intensity should be considered together. Kinetic models asa function of multiple factors are more ideal than single factor models.

Keywords: Fucoxanthin, Kinetic modelling, *Phaeodactylum tricornutum*

Acknowledgement: This study was a part of Cost Action ES1408 and the authors would like to thank the Scientific and Technological Research Council of Turkey (TUBİTAK) with the project number of 115M014 for the financial support.



Model Development for the Prediction of Astaxanthin Production

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Abstract

A model for the prediction of astaxanthin productivity from *Haematococcus pluvialis* that takes into account the light intensity is presented in this study. Astaxanthin is a valuable carotenoid pigment with applications in many areas, nutraceuticals, cosmetics, aquaculture and food and feed industries. It's found in seafood such as shrimp, crab, salmon, sea bream and some other organisms like bacteria, fungi and algae. *H. pluvialis* is a green microalga that represents the richest natural source of astaxanthin. In this study, the experiments were performed in a 2 L stirred tank photobioreactor with two different stage. In the first stage, the cells were cultivated under favourable conditions and then, astaxanthin accumulation was induced by stress conditions such as high light intensity and nitrogen-phosphate deficiency. For the prediction of cell growth Garcia-Malea model was modified and astaxanthin changes were modeled using Luedekig-Piret kinetic model. At the end of the study, model parameters and experiment results showed parallel changes. Light saturation coefficient and optimum light intensity that applied during experiments was fitted each other. The predicted astaxanthin concentration of 33.21 mg.L⁻¹ was 10% higher than the value of experimental astaxanthin concentration.

Keywords: Astaxanthin, Kinetic modelling, *Haematococcus pluvialis*.

Acknowledgements: This study was a part of Cost Action ES1408 and the authors would like to thank the Scientific and Technological Research Council of Turkey (TUBİTAK) with the project number of 115M014 for the financial support.

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Developing Properties of New Endemic Crustless Pumpkin Seeds and Sensory Consumer Satisfaction of It

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Abstract

As a cookie in Turkey sunflower and pumpkin seeds are most consumed two kind of product. There are different kinds of their prepared types on market stores like salty, unsalty, shelly, crustless or with some other spicy formulations. The type of crustless seed of both sunflower and pumpkins are made mechanically by removing their shell. As we look the consumer preferences and advantages of this unshelled seeds, which can be used in other foods as an enriching additive, or can be consumed more easily by old people and by child's. This endemic characteristic pumpkin strain which does not have a shell naturally can be preferable. As a first step we searched and put out the sensory characteristic of this product for comparing with other commercial product. As we saw it has some superior sensory characteristic than commercial products. The second most important aim of this research is developing this endemic pumpkin seeds characteristics and productivity to have a product with strong characteristic in international market by using hybridization and genetic methods. This is a long term work and we are still working on it.

Keywords: Crustless pumpkin seed, hybridization and recombination, consumer satisfaction



Effects of Extraction and Spray Drying on Phenolic Content of Blueberry

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Abstract

Berry fruits are rich in phytochemicals like polyphenols. Phytochemicals have antioxidant activities, prevent cancer, cardiovascular disease, diabetes, obesity, neurodegeneration and protect health. However, they are prone to destruction by environmental conditions. Encapsulation by spray drying protects phytochemicals and increases their stability. The objective of this study was to determine the effects of extraction and spray drying on phenolic content of blueberry. Research methods were as follows: Organic blueberries were purchased from a farm, Trabzon, Turkey. Extraction: Ethanol: water 65:35 containing 0.5% (m/v) citric acid was used as solvent. Fresh fruit: solvent ratio was 1:15(m/v). Extraction was performed at 50°C for 45 minutes. Solvent was evaporated by rotary evaporator at 45°C, 40 rpm. Spray drying: Buchi B-290 spray dryer was used. Response surface methodology was applied for experimental conditions and optimization. Air inlet temperature (120-150°C), extract ratio in feed mixture (20-40%), and feed mixture concentration (20-40°Brix) were independent process variables. Encapsulating agent was 8 DE maltodextrin. Results: Total phenolic content was determined by Folin–Ciocalteu method. Total phenolic content of samples were as follows 34.77 mg GAE/g dry blueberry for fresh fruit and 28.83 mg GAE/g dry blueberry extract for extract. The retention of phenolics was 80.3% by the end of the extraction. Operational efficiencies of powders changed between 70.9 and 94.2%. In conclusion, it was found that the loss of phenolics was low and spray drying was an efficient way for protection of phenolics. Therefore, it could be a preferable method for encapsulation of phenolic compounds of blueberry due to the high yield of process.

Keywords: Blueberry, Extraction, Phenolic, Spray drying

Effects of Ohmic Thawing Process on Some Quality Characteristics of Minced Beef Meat

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Abstract

Freezing technologies are important for food preservation and processing operations. However, frozen meat products need to be thawed before processing or consumption. The main goal of the thawing process is to cause the least amount of damage over the shortest possible thawing time. Conventional food thawing methods (at refrigeration or under running cold water) require longer treatment times and can adversely affect a number of quality attributes such as possible microbial growth, chemical deterioration and excessive loss of water caused by dripping or dehydration. To overcome these problems, alternative thawing methods were investigated. In this study, an alternative thawing method (Ohmic Thawing; OT) was applied to frozen minced beef samples (13 cm x 6 cm x 2 cm rectangular prism) having fat contents of 2%, 10% and 18% at 10, 13, and 16 V/cm voltage gradients and by using titanium electrodes and novel custom-made ohmic thawing cell at 4°C ambient temperature. Control thawing processes were applied under 4 °C refrigeration conditions (RT) and under running 4°C cold water (URCW) conditions. Thawing was performed until the center temperature of samples reached to -1 °C from -18 °C. It was found that the shortest thawing time was obtained for the ohmic thawing at the voltage gradient of 16 V/cm. For 16 V/cm, thawing times of minced beef samples having fat contents of 2%, 10% and 18% were determined as 2075, 1850, 1873 s, respectively. It was evaluated that drip loss values for all thawing methods studied were lower than 1%. As a result of ohmic thawing application, pH values of minced beef samples having higher fat contents (10% and 18%) increased while pH of samples having low fat content (2%) decreased, compared to those of raw minced beef samples. Total colour change values (ΔE) of ohmically thawed samples were higher than those of conventionally thawed samples ($p < 0.05$). It was recommended that ohmic thawing could be applied as an alternative fast thawing method for minced beef samples.

Keywords: meat, tempering, colour, drip loss, fat content, voltage gradient

Acknowledgements: This study was the part of the Phd. Thesis, and was financially supported by TUBİTAK-TOVAG group (Project no. 115O207).



Investigation of the Presence of Genetically Modified Organism (GMO) in Baby Foods Consumed in the Market of Turkey

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Abstract

Foods obtained by biotechnological methods to modify the genetic sequences of living materials, to improve their existing properties and/or to gain new features are called as Genetically Modified Organism (GMO). Infant Formula and Baby Follow-on Milk which are consumed by babies during their first year of the life, can also contain ingredients such as soy, corn, rice products according to their consumption period. It is thought that GMO screening should also be done in baby formulas that contain these components which are extensively produced as the genetically modified organisms in the world. In this study presence of GMO ingredients and general composition (ash, moisture, total fat, carbohydrates, and protein) of infant formulas and baby follow-on milks produced and consumed in the market of Turkey. In the result of the study all the infant formulas and baby follow-on milks analysed have reasonable composition of Turkish Regulatory limits. It is found that any infant formulas and baby follow-on milks are containing the p35S, tNOS and pFMV isomers scanned by Real Time PCR GMO screening method.

Keywords: Genetically Modified Organism (GMO), Infant formula, Follow-on milk

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The Level of Effect of Environmental Noise On Hospital Yards: Example of Samsun Province

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Abstract

Noise is defined as undesired sound. Today, it has become one of the biggest problems of societies developing and changing in parallel with the development of technology. Noise pollution is a significant type of environmental pollution effecting health and quality of life of people negatively. While noise pollution is seen in different ways within the living areas of people, diversity and level of noise increase in urban areas. The level of cause by surroundings in yards of hospitals which are defined as facilities vulnerable to noise in accordance with the Regulations on Evaluation and Management of Noise was measured within the scope of the study. Noise measurements were performed at 5 different hospitals in Samsun Province in three different periods of day [morning (07:30-09:30), evening (16:00-18:00), night (22:00-00:00)]. Measurements performed at the hospital yards were repeated eight times. The data obtained from these measurements were statistically analyzed with respect to correlations between the noise level and periods of day. And it was found that the level of noise at the hospital yards increases in the morning (7:30-09:30) and decreases to the minimum at night (22:00-00:00).

Keywords: Noise, hospital yard, Samsun

Current Status of Grapevine syrah virus 1 in Different Grape Varieties in Turkey

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Abstract

Grapevine Syrah virus-1 (GSyV-1) is a member of the genus *Marafivirus*, family *Tymoviridae* and has a single-stranded, bicistronic, positive-sense RNA genome ca. 6,481 nucleotides in size. ORF1 codes for the replication-associated proteins (methyltransferase, protease/endo/pepsidase, helicase, polymerase) and for the coat protein at the 3' terminus. ORF2 codes for the putative movement protein 27 kDa in size. This virus, originally reported from the USA, has now been reported from several European countries and more recently from Chile, Brazil and South Africa. The dormant canes of different grapevine cvs. Syrah, Palieri, Zinfandel, Merlot, Pinot noir and a local cultivar called Antep karası were collected from two different provinces (Tekirdağ and Hatay) in Turkey and they were screened by RT-PCR with two different primer for the presence of GSyV-1, *Grapevine Pinot gris virus* (GPGV), *Grapevine virus A* (GVA), *Grapevine virus B* (GVB), *Grapevine virus D* (GVD) and *Grapevine rupestris stem pitting-associated virus* (GRSPaV). Two samples of cvs. (Syrah and Antep karası) collected from both provinces were found to be infected by GSyV-1 by using GSyV-1Det-F/GSyV-1Det-R primer pair which amplifies a 297-bp fragment corresponding to a partial region of the putative methyltransferase gene. RT-PCR assay with alternative primer pair GVQCP-F/GVQCP-R targeting the coat protein (CP) gene revealed the GSyV-1 specific 720 bp product in only one sample (cv. Syrah) collected from Tekirdağ province. The unsuccessful CP-based detection of the Hatay sample is probably result of point mutations in the primer sequence. All obtained PCR products were sequenced and the sequences were deposited in GenBank. Comparison of the partial methyltransferase gene sequences (KY558548 and KY558550) showed 90-98% nucleotide identity to different GSyV-1 isolates available in GenBank, while the partial CP gene sequence (KY558549) revealed 89-97% nucleotide identity to the database sequences. The CP gene nucleotide sequences shared the highest sequence identity at the nucleotide level (97%) with isolates from Slovakia (KP221272, KP221265), whereas the putative methyltransferase gene nucleotide sequences shared 98% nucleotide identity with isolates SK98, SK416 from Slovakia (KP221289, KP221288) and HU10PH from Hungary (KT005396). Among the GSyV-1 positive samples, two samples belong to cv. Syrah were also infected by GPGV and one local cultivar (Antep karası) was infected by GVA and GRSPaV. No particular virus-like symptoms were observed on GSyV-1 infected grapevines.

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A research about "Healing Gardens"

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Abstract

Nature and areas to close it have quite positive effects on human health. Studies carried out revealed that images and sounds in the nature display tranquilizer, sedative and alterative effects. In this context, hospital gardens should be handled as natural alterative environments for patients who are there for various reasons, and its designs should be built carefully. Hospital gardens; besides being places keeping away patients under medical treatments from cold and stressful environment of hospitals and helping with the treatment process, also it should be considered the aim at relaxing the working staff mentally and sensually, and making them breathe. Places designed, applied and called as "Healing Gardens" with these aims have the boosting effect on the life quality of humans. With utilizing some features as design principles, qualities and the aim of Healing Gardens in the light of studies carried out earlier, sample designs have been examined.

Keywords: Healing Gardens, Hospital Garden, Landscape Design



Serological and Molecular Detection of Viruses, Which are Causal Agents of Wood Deformation (Rugose Wood) in Grapevine Producing Areas in Hatay and Tekirdağ Provinces

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Abstract

Causal agents of rugose wood were investigated in different grape cultivars in Hatay and Tekirdağ provinces where grapevine cultivation is very important in 2015-2016. Totally 100 samples from Hatay and 133 samples from Tekirdağ were collected from foreign and local grape cultivars. Causal agents of rugose wood, *Grapevine virus A* (GVA), *Grapevine virus B* (GVB), *Grapevine virus D* (GVD) and *Grapevine rupestris stem pitting associated virus* (GRSPaV) were tested by DAS-ELISA and/or RT-PCR. According to DAS-ELISA results, GVA was detected with 4,77% infection rate in different grapevine cultivars in Hatay. All tested samples were found negative for GVA in Tekirdağ province. In RT-PCR analysis, the most common virus in Hatay and Tekirdağ provinces was found as GVA (69% and 17%), GRSPaV(with RSP48-49 primer pairs 39% and 40,6%; with RSP13-14 primer pairs 41% and 12,96%). GVD was found only in Hatay province with 4% infection rate and GVB was not found in all tested samples. The most encountered multiple infections were detected GVA+GRSPaV (in Hatay 37%, in Tekirdağ 12%). In RT-PCR analysis of DNA amplification of viruses, GVA (429 bp), GVD (852 bp) RSPaV48-49 (330 bp) ve RSPaV13-14 (339 bp) were obtained.

Keywords: Grapevine, virus, ELISA, RT-PCR, Turkey.

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An Overview of Fruit Tree Phytoplasmas and Their Potential Vectors in Turkey **

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Abstract

Surveys were carried out in diverse location in Turkey to verify phytoplasma diseases in fruit trees showing leaf rolling, reddening, yellowing symptoms. The presence of phytoplasmas in plant and insect samples and their identification was carried out by symptom observations in the field and nested polymerase chain reaction (nested-PCR) and restriction fragment length polymorphism (RFLP) analyses. The results showed that European stone fruit yellows phytoplasmas (*Candidatus* Phytoplasma prunorum belonging to group 16SrX-B) were identified in apricot, peach, plum and almond samples collected from germplasm collection and commercial orchards and also in *Cacopsylla pruni*. Samples from pear showing symptoms of slow decline and reddening and *C. pyri* individuals were found positive for pear decline phytoplasmas (*Candidatus* Phytoplasma pyri belonging to group 16SrX-C). Apple proliferation phytoplasmas (16SrX-A) were found in apple samples and *C. picta*, *C. affinis* and *C. melanoneura* in low infection rate. *Ca. P. asteris* (16SrI-B) was found in tested sweet cherry samples showing decline symptoms. When some symptomatic pomegranate samples were tested, aster yellows (16SrI-B) and stolbur (16SrXII-A) phytoplasmas were found as mixed infection. According to these results, European stone fruit yellows and pear decline phytoplasmas are the most devastating phytoplasma diseases in stone fruit and pear trees, respectively.

Keywords: Phytoplasma, vectors, Turkey.

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Genetic Variability of Turkish *Grapevine rupestris stem pitting-associated virus* Isolates^{**}

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Abstract

Grapevine rupestris stem pitting-associated virus (GRSPaV), which is a member of the genus *Foveavirus* in family *Betaflexiviridae*. It is known to be a widespread virus in grapevines and belongs to the “rugose wood complex”, a group of viruses and/or syndromes associated with alterations of trunk in vines. Additionally, due to the high genetic variability associated to this virus, different isolates have been reported from different local and foreign grapevine cultivars growing in different countries. In detected in 2015 and since then, several detections have been done in different grapevine Turkey, GRSPaV was first cultivars and regions. The genetic diversity of the Turkish GRSPaV isolates, based on partial coat protein (CP) gene were determined for representative virus isolates and compared with reported global isolates. Selected four isolate of GRSPaV were sequenced and they showed 98-99% homology with the reference isolates deposited in GeneBank.

Keywords: Grapevine, GRSPaV, genetic variability, Turkey.

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Galactooligosaccharides Production by Using β -galactosidase from *Aspergillus Oryzae*: Effect of Lactose Concentration

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Abstract

Galactooligosaccharides (GOS), non-digestible polymers of glucose and galactose, have gained great popularity in the area of functional foods due to their well-reported health benefits and their ability to enhance functional properties of food products. GOS are generally synthesized from lactose in a kinetically controlled transgalactosylation reaction catalyzed by β -galactosidase. The amount of GOS produced can be affected by several factors such as initial lactose concentration, enzyme origin and concentration, temperature, GOS synthesis time, pH and inhibitor. Thus, it is important to find out how these parameters influence the enzymatic synthesis of GOS. The aim of the presented study is to examine the effect of lactose concentration on production of GOS from lactose using β -galactosidase from *Aspergillus oryzae*. For this purpose, GOS production was carried out in a batch reactor at 35°C and the enzyme concentration was 0.137 g enzyme/L lactose solution. The amount of GOS (w/w) was determined as 26.74%, 21.75% and 10.76% corresponding to lactose concentrations of 340 g/L, 180 g/L and 45 g/L, respectively. Therefore, the results showed that the lactose concentration has a significant effect on GOS yield. The higher was the initial lactose concentration the higher was the GOS yield. The high lactose concentration favors transgalactosylation over hydrolysis, and results in high GOS yields.

Keywords: Galactooligosaccharide, β -galactosidase, lactose concentration

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The Use of Blueberries in Muffin Cakes

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Abstract

Berries, especially blueberries (*Vaccinium corymbosum L.*), are regarded to be a part of a healthy diet owing to their content of phenolic compounds. The protective effects of blueberries have generally been attributed to the wide array of polyphenolics such as anthocyanins, flavan-3-ols, proanthocyanidins, flavonols, chlorogenic acid, quercetin, kaempferol, resveratrol and catechins present in the fruit, which are responsible for the high free radical scavenging capacity of blueberries measured by several in vitro assays. Bakery products are the most consumed foods in the world and among these products; cakes are the most popular products due to their deliciousness and special organoleptic characteristics. Among different types of cakes, Muffin cake has a special position due to its deliciousness. In this study, muffin cakes were produced by the addition of 8, 16 and 24% of blueberries to cake formulations, and total phenolic contents, antioxidant activity values, and some sensory properties of cakes were determined. It was found that the total phenolic contents, and antioxidant activity values of muffin cakes increased by increasing the amount of blueberries in the formulation ($P < 0.05$). In the sensory evaluation, the panelists gave scores for crust color, crumb color, crumb cell structure, texture, smell, chewiness, flavor, and overall acceptance. Cakes having 8 and 16 % of blueberries received the best liking scores ($P < 0.05$) in flavor. Although the cakes having 24% of blueberries had lower ($P < 0.05$) scores in texture and chewiness, all of the cakes liked equally ($P > 0.05$) in smell and overall acceptance.

Keywords: Blueberries, muffin cake, total phenolic contents, antioxidant activity, sensory



Plant development in two different tomato species grown under traditional farmer conditions

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Abstract

Irrigation is an integral part of modern agriculture and forms one of the most important agricultural inputs in crop production. Irrigation affect plants susceptible to moisture in the soil more positively than other plants. However, in order to obtain the benefits expected from irrigation, it is necessary to select the most suitable irrigation method for the conditions, establish the irrigation system required for this method and apply the amount of water that the plant needs in time. On the other hand, a reduction can be expected in production if the moisture level in the root zone is less or more than desirable for optimum growth for any reason. In this study, the development of two different tomato species cultivated and irrigated under traditional farmer's conditions was monitored. The research was carried out in a glasshouse in the Research and Application Farm of the Faculty of Agriculture of Akdeniz University in Antalya, where the greenhouse farming is common. Olgun F1 and Verty F1 tomato species were used in the study. Amount of water applied to each irrigation was recorded with a water meter attached to the irrigation system during the experiment. It was no interference to traditional farmer conditions in terms of cultivation but several observation and measurements were taken from 2 different tomato species at various periods. These observations and measurements which were taken were discussed with the results of literature which the same plant was irrigated by full and deficit irrigation. As a result, amount of irrigation water applied to tomato plant grown traditional farmer conditions during cultivation period and differences between plant developments according to tomato species was determined.

Keywords: Irrigation, plant development, tomato, traditional farmer conditions

Optimization of Extraction Parameters on the Isolation of Carotenoids and Polyphenols from Persimmon Peel

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Abstract

There is an increasing interest to persimmon (*Diospyros kaki* L.) worldwide as reporting its effect on human health. The production rate is increasing and the persimmon production almost doubled between 2010 and 2012 in the world. Persimmon skin, in particular, has high concentrations of polyphenols and carotenoids. However, there is no study in the literature showing effects of extraction parameters on the isolation of carotenoids and polyphenols from persimmon. The aim of this study was to investigate the effects of solvent type, extraction temperature, time and solvent to solid ratio on the isolation of beta carotene, lycopene and total phenolic compound from persimmon peel. The peels were separated from flesh, stored at -20°C until usage and thawed using microwave before treatments. Firstly, the effects of four different solvents (acetone, ethanol, methanol and hexane) at 25, 50 and 75°C were monitored at constant extraction conditions (120 min, 1:50 peel-solvent ratio). Acetone had the highest extraction capability of polyphenols followed by methanol, ethanol and hexane. On the other hand, ethanol gave the highest recovery of both beta-carotene and lycopene followed by acetone and methanol. Extraction at 75°C had a detrimental effect on polyphenols while such temperature gave highest efficiency for carotenoids. After these findings, an optimization study was performed by selecting ethanol as extraction solvent. Response surface methodology (RSM) was used in the experimental design. Independent variables of Box-Behnken design were temperature (25-65°C), time (30-110 min) and solvent to solid ratio (20-60 mL/g). ANOVA results showed that all the process variables had significant effects on all of the responses ($P<0.05$) with the coefficients of multiple determinations of $0.9323<R^2<0.9871$. The optimum extraction parameters were found as 57°C, 105 min and 43 mL/g. The total phenolic compound, beta carotene and lycopene at optimum conditions were found as 73.75, 1.83 and 8.38 mg/kg, respectively.

Keywords: Persimmon, Carotenoid, Polyphenol, Extraction, Optimization

Ohmic Heating of Beetroot Juice: Exergetic and Energetic Efficiencies

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Abstract

Ohmic heating (OH) is an electrical heating method, using the electrical current passing through a food product. Ohmic treatment has been used in many food applications such as heating, thawing, evaporation, preheating, cooking, blanching, pasteurization, sterilization and extraction etc. However, there are limited information about exergy and energy analyses for ohmic heating of vegetables juices in the literature. The aim of this study was to determine the energy and exergy efficiencies and improvement potential (IP) of ohmic heating process. Fresh squeezed beetroot juice (BJ) was heated from 10°C to 80°C at 10, 15 and 20 V/cm voltage gradients by ohmic heating. The energy efficiencies for ohmic heating process were 62.79±2.22%, 72.98±1.49% and 82.07±3.2% and the exergy efficiencies values were 62.68±2.17%, 72.93±1.39% and 82.00±3.12% at the 10, 15 and 20 V/cm voltage gradients, respectively. As the voltage gradient increased, the heating time decreased and the energy-exergy efficiency values increased. The lowest improvement potential was found at 20 V/cm since the energy loss values was minimum at this voltage gradient. It is recommended that ohmic heating should be applied to beet root juice at 20 V/cm voltage gradient since this voltage gradient resulted to shortest processing time with high efficiency. The result of this study will give applicable data on performance evaluation of ohmic heating applied for vegetable juices.

Keywords: Ohmic, energy, exergy, numerical model

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Physical and Sensory Properties of Cakes Produced With Different Brands of Sunflower Oils

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Abstract

Helianthus annuus or sunflowers is a genus in the family Asteraceae is usually grown for its seed and oil. The first uses of sunflower was by Native Americans in prehistoric times. Sunflower is very important oily plant because of its high oil content (%22-50). Sunflower has second biggest planting area after cotton among oily plants and it provides of 50% of total oil needs. Cake has an important place in bakery products obtained from wheat flour. In general meaning, the cake is a bakery product by cooking dough consist of flour, sugar, oil, egg, baking powder, water, milk, spices and nuts as flavors. Oil is the one of the most important ingredient for the taste in cake formulation. In this study, cakes were produced by 4 different brands of sunflower oils which have collected from markets and differences in some physical and sensory characteristics of cakes were determined. As physically, the texture properties (hardness, chewiness, gumminess, cohesiveness and springiness), interior and exterior color, specific volume, shrinkage value, volume, symmetry and uniformity indexes of the cakes were determined. In sensory analyses, evaluation the interior and exterior color, chewiness, texture, smell, taste and overall acceptance of cakes were asked to the panelists. In physical analysis, specific volumes of cakes were significantly ($p<0.05$) different. There were no important changes on interior and exterior color of cakes. As sensory evaluation, significant differences ($p<0.05$) were obtained on chewiness, pore structure, smell, overall acceptance and interior and exterior colors of the cakes. There were no statistical important differences ($p>0.05$) on textural properties and tastes of the cakes.

Keywords: Sunflower oil, cake, physical properties, sensory

The Effects of Dried Plum Puree on Some Quality Parameters of Model System Meat Emulsions

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Abstract

Emulsion type meat products are quite popular and consuming is increasing worldwide. Meat emulsion systems have been studied by several researchers to evaluate the physical, chemical and technological properties. In the manufacture of emulsion meat products is essential to balance the quality and quantity of protein with processing functionality, nutritional value and cost. In addition to meat proteins, a variety of non-meat ingredients have been used as fillers, binders and extenders to reduce water loss, cook shrink and formulation costs. Plum itself is a high-yield vegetable, easy to grow and, consequently, inexpensive. Plum is believed as health and functional vegetables because it is rich in phenolic, flavonoids, vitamins and minerals. Dried plum puree contains indigenous chemical compounds as pectin, malic acid, sorbitol that serves specific functions in foods. Phenolic compounds in dried plum puree have been reported to be the main contributors of its antioxidant properties. Plum-derived food ingredients are used to function as antioxidants, antimicrobials, fat replacers, and flavorings. In this study, dried plum puree has been used as non-meat ingredients in the production of model system meat emulsion. Dried plum puree at different ratio were (2.5, 5 and 7.5 %) added to emulsion to determine effect on the chemical composition, pH values, cooking yield, water holding capacity, emulsion stability and oxidation level, in terms of TBA of model system meat emulsion. Emulsion stability, cooking yield and water holding capacity of the model system meat emulsion increased with increasing of the dried plum puree ratio. Decrement in pH values and increment in ash and protein content of model system meat emulsion were observed with increasing of the dried plum puree amount in the formulation. TBA values were unaffected with the use of dried plum puree.

Keywords: Meat emulsions, plum, model system

Novel Thawing Technique for Frozen Foods: Ohmic thawing

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Abstract

Thawing is an important operation for processing of frozen foodstuffs, and it must be carried out rapidly at low treatment temperatures. Conventional thawing methods (at refrigeration or under running cold water) require longer treatment times causing possible microbial growth on product surface. In addition, these methods result to the reduction of nutritional quality due to leaching of soluble proteins, high consumption of energy and large quantities of loaded waste-water. To overcome these problems, researchers have investigated alternative thawing methods. Ohmic heating is an electrical heating method based on the passage of electrical current through a food product having electrical resistance as a part of the electrical circuit. It can be applied as a thawing method for foods. The most important benefit of this novel thawing technique is the shortening the thawing time significantly compared to conventional thawing methods at the same temperature range. Thus, fast thawing time result to the lower microbial growth in surface, the better final product quality, and higher energy efficiency. However, application of ohmic heating as a thawing technique for foods have some limitations. For solid form of frozen samples, the need of good contact of the sample with the electrodes is the main problem for ohmic thawing. Likewise, dramatic change of electrical conductivity and electrochemical properties of the foodstuff with the temperature in frozen region complicate the ohmic thawing process. The shape, composition and process parameters (voltage gradient, temperature, electrode material, frequency) should be carefully optimized to obtain higher efficiencies. The aim of this study is to present new developments in ohmic thawing method, and to discuss its advantages and disadvantages and potential applications in thawing of food materials.

Keywords: Ohmic, thawing, tempering, electrical, voltage gradient

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Effect of enzymes used in cheese making for the composition of whey

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Abstract

Whey is the watery part of milk that is separated from the coagulable part or curd especially in the process of making cheese and that is rich in lactose, minerals, and vitamins and contains lactalbumin and traces of fat. Whey is commonly use as a byproduct in food, feed, cosmetic industry and medical field. Especially in food industry whey is has a large consumption area as a emulsifier and thickener. Whey components can be different according to type of milk, cheese and enzyme. In this study effect of enzyme type on physicochemical properties of white cheese whey were examined. Three different enzyme type (rabbit rennet extract, commercial calf chymosin, commercial camel chymosin) were used in white cheese production at the same process conditions and pH, acidity, fat, protein, dry matter and ash content of whey samples were determined after cheese production. there was a significant difference ($p < 0.05$) in protein contents of whey samples. The highest protein value (1.03 ± 0.03) was observed in whey samples obtained from cheese produced from rabbit rennet. The dry matter, pH, acidity, fat and ash values of whey samples show similar values ($p > 0.05$). According to obtained physico-chemical analyses' results; enzyme types are not significantly affect the whey composition except whey protein.

Keywords: Whey, rabbit rennet, chymosin

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Changing Soil Properties of Van City Center and Its Vicinity Areas by Parent Material and Vegetation Cover

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Abstract

Some soil properties could be changed by parent material, topography, climate vegetation cover and time. Mineral contents in soil, considered, in relation with vegetation cover, also soil minerals are in relation with parent material, relief, time differences and local differences of vegetation cover. In this study, the soil properties of Van's city center and its vicinity areas are found out that they were changed by product pattern and parent material. 1/25000 scale topography, belongs to that study area, land use, geology and geomorphology maps were used in this research. By using these maps, nine soil samples from different units where field crops are grown and different geological and geomorphological units were collected from 0-30 cm depth. Soil's pH, EC, soil texture CaCO₃, organic matter, total nitrogen and available phosphorus analysed. According to the results obtained from research, the pH values of soil were moderate alkaline and alkaline; the CaCO₃ contents varied medium and high due to the effects of main material. In textural contents of soils, the effects of parent material and vegetation cover were observed and they were found in medium and heavy textured groups. Soil's EC values were in non-salty soil class. The contents of organic matter varied with vegetation cover and they were found out sufficient especially in areas where forage plants were grown and pastured. Similarly, determined that the soil's nitrogen contents, essential plant nutrient element, are low and medium. The phosphorus content of soils varied with fertilization and were generally low. The soil properties of Van's city center and its vicinity areas were changed and varied with the vegetation cover and the parent material.

Keywords: Vegetation cover, Parent material, Soil properties, Geological units, Geomorphological units, Field crops.



The Comprasion of Poultry and Seafood Gelatin Characterization

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Abstract

Gelatin is an important biopolymer of peptides and proteins generated by partial hydrolysis of collagen extracted from the bones, skin and connective tissues of animals. The quality of gelatin base on its physicochemical features, rheological characteriscits and severity of the production procedure. Nearly all commercial gelatins are produced from the hide of bovines and porcines to a smaller degree from their bones. Gelatins which were obtained from land animal sources are preferred over marine resources owing to their better gel strength, desirable melting point and viscosity. In contrast with having advantages, land animal gelatine causes some certain problems. For instance example, Jewish and Muslim societies do not concent pork gelatin, and beef gelatin is suitable only if it has been practiced according to their religious onligations. On the other hand, gelatin from aquatic sources has been illustrated to be free of communicable materials such as bovine spongiform encephalopathy. These factor have encouraged production of gelatin from poultry and aquatic sources as a replacement for mammalian gelatins. The physical properties of gelatin based on to a large extent the amino acid sturcture, which is highly species specific and the molecular weight distribution, which results generally from processing situation. In this rewiev compared to gelatine obtained from aquatic and poultry source with physicochemical properties and detailed in using area, commercial applications.

Keywords: Gelatine, Seafood, Poultry, Quality



Analysis of Garlic Production and Marketing in Kahramanmaras Province of Turkey

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Abstract

Garlic have come from same family, which is liliaceae, with onion and leek. It is herbaceous plant living 2 years. Because of the fact that garlicks rarely seed, garlicks are produced by their tubers. The history of garlic is as old as human history. At the present time, garlic is grown in West, East and Middle Asia, Europe, North Africa, China, India, Egypt, America and Turkey. In 2015, the total production amount of garlic is 199.223 tones and average yield is 0,9 ton in Turkey. Kastamonu province is on the first rank with 23.328 tones, Kahramanmaras province comes second with 15.527 tones and Gaziantep province ranks third with 14.878 tones. Kahramanmaras, which is the city that mostly meets the majority of green garlic need for Turkey, has 6.000 decare field yearly for garlic cultivation. In this study, it is aimed to analyze garlic production and marketing structure in Kahramanmaras Province. Statistical data used in the study is obtained from Turkish Statistics Institute and Directorate of Food, Agriculture and Livestock. Also producer and marketing problems will be discussed.

Keywords: Garlic, Production, Marketing, Kahramanmaras



Some Quality Properties of Fish Fillets Coated with Paprika Pomace and Seeds

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Abstract

Paprika paste is a traditional product consumed in Turkey, Spain, Mexico and Korea. But paprika paste production waste is not able to be used as a human consumption. In recent years waste utilization is important at value adding and environment protection. In this respect, the aim of this study is to utilize the paprika paste production waste at coating the trout fillets. Trout fillets were coated with paprika paste production wastes (paprika seed and paprika pomace) and bread crumbs (control group). Accordingly the color, textural and sensory properties of the coated samples were determined. Sensory evaluations were done by panelists for external color, odour, taste, crunchiness, oiliness, texture, and overall acceptability on a hedonic scale from 1 (dislike extremely) to 5 (like extremely). The highest L* values were determined in control samples. a* values of control samples, paprika seed coated samples and paprika pomace coated samples were 8.14±0.01, 8.21±0.71, 18.60±0.46 respectively. However, b* values of paprika seed and paprika pomace coated samples were not found significantly different. As a result of sensory analysis, control samples got the highest scores which was followed by paprika pomace coated samples according to the overall acceptability. Among the coated samples, the trout fillets coated with paprika pomace were found significantly different for hardness, fracturability and chewiness where as there was not any significance between the all coated samples for springiness, elasticity and gumminess. As a conclusion, results showed that paprika pomace could be utilize for coating the trout fillets without quality losses.

Keywords: Waste utilization, coated fish, paprika paste



Recovery of phenolic compounds from pomegranate husk: A comprehensive review on membrane processes

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Abstract

The main objective of this study is to investigate the application potentials of membrane processes in the recovery of the phenolic compounds from the pomegranate husk. Recently, novel membrane technologies have been developed to fractionate the high-added value compounds from food processing wastes. It is well-known that phenolic compounds having antimicrobial, anti-allergenic, anti-inflammatory, antioxidant activity and radical scavenging properties are one of the high-added value compounds in the food industry. In this context, pomegranate (*Punica granatum L.*) husk is a good source of phenolic compounds. Moreover, the amount of phenolic compounds in the husk is higher than that of in the arils. Therefore, the recovery of phenolic compounds from the pomegranate husk is considered to an industrial requirement as they are potential food additives. In this study, the effects of membrane characteristics such as pore size, hydrophobicity and roughness and process parameters such as trans-membrane pressure and cross-flow velocity on the maximum recovery achieved have been discussed comprehensively according to literature data.

Keywords: phenolic compounds, membrane, recovery



A comparative study of fatty acid composition of tree mushroom species from Anatolia

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Abstract

In literature survey, palmitic, stearic, oleic and linoleic acids were reported as the most common fatty acids in mushrooms. Oleic acid has an important role in reducing cholesterol levels. Linoleic acid and linolenic acid, known as essential fatty acids, are essential for human's basal metabolism and have important health effects [1]. Deficiency of dietary fatty acids or their inefficient metabolism have an effect on the development and progression of heart diseases [2]. In this study, fatty acids composition of tree mushroom species; namely, *Phellinus igniarius*, *Coprinus comatus*, *Daedalea quercina*, *Polyporus squamosus* and *Trametes versicolor* were determined. The lipid fractions of the mushrooms were obtained by extracting mushrooms with hexane: chloroform (8:2, v/v) solvent system and derivate to their methyl ester forms using BF₃-methanol reagent. For the identification of the fatty acids, library search was carried out by NIST and Wiley 2005. Supelco™ 37 components of fatty acid methyl ester were used for the comparison of the GC chromatograms. Totally, eighteen fatty acids were identified and quantified by GC-FID and GC-MS. Linoleic acid was found as major fatty acid in all studied mushrooms varied from 18.44 to 57.33 %. Oleic acid was the second abundant fatty acid in all studied mushroom varied from 9.92 to 46.66 % except *D. quercina*.

Keywords: Fatty acid, Tree mushrooms, Linoleic acid, GC-FID, GC-MS

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Antimicrobial Activities in Some Edible Macrofungus Strains Growing in Tunceli Region

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Abstract

In this study, antimicrobial activities of methanolic extracts from *Agaricus campestris*, *Langermannia gigantea*, *Pleurotus eryngii* var. *ferulae* and *Pleurotus eryngii* var. *eryngii* collected from Tunceli region were examined. By using Microdilution Method on methanolic extracts from all the species studied, their antibacterial activity against *Enterococcus faecalis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and their antifungal activity against *Candida albicans* were investigated. Besides, their minimum inhibitory concentration (MIC) where there is no visible reproduction was found out. It was also detected that the fungi extracts used in the study have different or similar effects on the development of tested microorganisms. All fungi extracts show the best antimicrobial effects against *S. aureus* and *S. epidermidis*, which are Gram(+), whereas their effect is weak against Gram(-) microorganisms. The methanolic extract from *A. campestris* show the highest antibacterial activity against *S. aureus*. Antifungal activity against *C. albicans* was not observed in any of the fungi extracts examined. In this part of the study, it was discovered that the antimicrobial activity varies according to the species of used testing microorganisms and fungi. Besides, it was detected that fungi samples collected from different areas may show antimicrobial activity against the same microorganisms at different levels and hence it was concluded that the habitat can affect the level of antimicrobial activity.

Keywords: Antibacterial, Antifungal, Microdilution Method



Microencapsulation of Food Aromas

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Abstract

Encapsulation is the process of coating a substance with a tiny capsule. Microencapsulation is a technique in which capsules (microcapsules) having a size in the range of micrometers to millimeters are wrapped with one or more coating materials (wall material) of the periphery of an active material (core material). Consumers prefer delicious, healthy and useful food products. Microencapsulation is a significant way to satisfy these demands by presenting foodstuffs at the right time and in the right place, a process for capturing the active ingredients in the form of particles. For example, with this technology, bad taste or malodorous ingredients that cause taste and flavor differentiation can be masked, stabilize foodstuffs and/or increase bioavailability. Microencapsulation can also be used for the immobilization of cells or enzymes in the production of foodstuffs or products, such as fermentation or metabolite production. Aroma is characterized by many volatile and odoriferous organic molecules. Many of the aroma matters are gaseous or liquid, but some solid substances such as vanillin and menthol may also have a clear odor. Generally, aroma molecules have a low molecular weight (between 100 and 250 Da) and can be classified as hydrocarbons, alcohols, aldehydes, ketones, esters, acids and sulphites. The suitable choice of food composition can control flavor release during food product preparation and consumption through food micro-structures. Microencapsulation may be one of such a design application. In food products, aroma molecules may be encapsulated to improve the functionality and stability of the aroma. Encapsulated aroma molecules have a variety of benefits such as easy handling, development of stability during final product and production, developing of safety, visible and textural effect creation, adjustable aroma features, controlled aroma release. Various methods are used for microencapsulation of aroma molecules. Spray drying, agglomeration and granulation, fluidized bed coating, spray cooling/spray freezing, melt injection, melt extrusion and coacervation are the most used methods in microencapsulation of food aromas.

Keywords: Microencapsulation, food aromas, flavor, aroma stabilisation



Transcriptome-Based Identification of ABC Transporter gene in sunn pest, *Eurygaster maura*

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Abstract

The ATP-binding cassette (ABC) transporters are members of a transport system superfamily of proteins that have important physiological functions in all living organisms. In recent years, ABC transporters are of special interest because of their role in insecticide resistance. In insects, they have been shown to contribute to resistance to insecticides by reducing toxic concentrations in cells/tissues. RNAi-mediated knockdown of some ABC transporters in insects resulted in developmental phenotypes, which included growth arrest, eye pigmentation defects, abnormal cuticle formation, egg-laying and egg-hatching defects, and mortality. In this study, we have identified an ABC transporter gene using RNA-Seq transcriptome sequencing in *Eurygaster maura* (EmABC), which is one of the most serious pests of wheat and barley. The neighbor-joining (NJ) phylogenetic trees based on multiple sequence alignment of identified amino acid sequences revealed that EmABC was clustered together with other Hemipteran ABC transporters. Further studies are warranted in order to provide more information on physiological and toxicological role of this novel protein in an agriculturally important hemipteran pest.

Keywords: ATP-binding cassette transporters, *Eurygaster maura*, transcriptome analysis

Pomegranate pestil production by different drying methods: Effect on bioactive compounds and volatile profile

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Abstract

Pestil is a tradition product of Turkey made by drying of gelatinized fruit concentrate. It is generally produced from grape and apricot. However, different fruits such as pomegranate, plum and mulberry can also be used in pestil production. The processing of pestil is achieved in several processing steps namely concentration of fruit pulps or juices, addition of wheat starch or flour, heat treatment, spreading in the form of a thin layer and drying. Gelation and drying are the most important processing steps that affects the physicochemical properties of the pestil. Therefore in the current study, the effect of formulation (traditional and hydrocolloid) and drying methods (hot air drying, microwave-assisted hot air drying (90 or 180W) and refractance window drying) on bioactive compounds (ascorbic acid, anthocyanins and phenolics) of pomegranate pestil were determined. According to the results, hydrocolloid formulation contained higher amount of bioactive compounds compared to traditional formulation. While samples produced with microwave-assisted hot air drying provided had higher phenolic compounds, samples produced with refractance window drying had higher amount of ascorbic acid and certain anthocyanins. The antioxidant activity of the pestil with hydrocolloid formulation and microwave-assisted hot air drying was higher than other treatments. Volatile profile of the samples clearly indicate that microwave-assisted hot air drying promotes the non-enzymatic browning reactions. Overall, a combination of the hydrocolloid formulation and the refractance window drying technique can be recommended for high-quality and continuous pestil production.

Keywords: refractance window drying; microwave assisted hot air drying; bioactive compounds; volatile profile

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Effects of Cover Crops on Some Soil Physical Quality parameters in a Apricot Orchard

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Abstract

Cover crops grown as conservation practice improve soil quality by increasing soil organic matter. The physical properties of soils are largely influenced by organic materials. One of the productivity parameters in crop production is the physical properties of the soil. Organic matter (OM) addition to soils has a greatest effect on organic matter contents of soils. This study was conducted to determine the effect of different cover crops as a source of organic matter on some physical quality parameters of soil. For this purpose, in the apricot orchard with clay loam structure was used *Vicia villosa* Roth., *Vicia pannonica* Crantz, *Vicia pannonica* Crantz and Triticale mixture (70%+30%), *Phacelia tanacetifolia* Benth., *Fagopyrum esculentum* Moench. In addition, the experiment was established a randomized complete block design with four replications including mechanical, herbicide and control plots. Soil samples were taken from 0–20 cm and 20-40 cm depth in each plot. According to the results obtained, the cover crops used in the apricot orchard improved some soil chemical properties such as; bulk density (BD), field capacity (FC) and permanent wilting point (PWP), saturated hydraulic conductivity (Ks), aggregate stability (AS), structural stability index (SSI) and mean weight diameter (MWD). While BD values of soils decreased, FC, PWP, Ks, AS, SSI and MWD values increased according to the control with cover crops applications. The highest correlations among the physical properties obtained for the *Vicia villosa* Roth. were found between OM and Db (-0,911**), OM and SSI (0,833**), OM and Ks (0,989**), Db and Ks (-0.906*), TK and Ks (0.987**). Compared with other applications, the highest increases in the 0-20 cm soil depth were in the application of the *Vicia villosa* Roth., decreasing the BD by 12.35% while increasing the Ks by 248.6%, available water capacity by 13.08% and SSI by 9.33%.

Anahtar Kelimeler: Cover crops, Soil physical quality parameters, Kayısı

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Effects of High Pressure Processing on the Sensory Quality of Marinated Herring

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Abstract

The term “marinated fish” is used to define fish products which consist of fresh, frozen or salted fish or portions of fish processed by treatment with an edible organic acid, usually acetic acid and salt and typically consumed as ready-to-eat products with no heat treatment. With the increasing demand for minimally processed foods, non-thermal processing has become an alternative to conventional methods such as thermal processing and chemical preservatives. High pressure processing (HPP) is a non-thermal preservation technique depending on pressure, processing time/temperature and product characteristics allows microorganisms to be inactivated product-spoiling microorganisms at low temperatures with fewer changes in texture, colour and flavour of the product as compared to conventional technologies. The aim this research was to evaluate the effects of HPP on the sensory parameters of marinated herring during the storage of three months. Samples were prepared with 2% acetic acid-8% NaCl and 4% acetic acid-8% NaCl and then treated with 100, 300 and 500 MPa pressure levels for 5 and 10 min. Marinated herring samples were evaluated for odour, appearance, texture and overall acceptance on a nine-point hedonic scale. HPP treatment significantly improved the sensory quality of marinated herring prepared with both 2% and 4% acetic acid solutions compared with control groups. Samples treated with 300 and 500 MPa pressure were still reasonable in terms of odour, appearance, texture and overall acceptance until the end of the storage period. The overall acceptance of control samples prepared with 2% and 4% acetic acid were acceptable until 30th and 45th day of storage, respectively, whereas samples prepared with 2% and 4% acetic acid and treated with 100 MPa pressure were acceptable until 60th and 75th day of storage, respectively. Results of this study showed that persisting of the sensory attributes depend on the pressure levels and pressure holding times.

Keywords: High pressure processing, Marinated herring, Sensory quality



A Review on the Use of Biosensors for Determination of Food Compounds

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Abstract

A biosensor is a device that is capable of providing specific quantitative or qualitative analytical information using a biological recognition element which is in direct contact with a transduction element. Signals originates from the change in concentration of the proton, emission of gases, emission-absorption of light, heat emission, mass exchange and the like. The signal is transformed into a measurable form such as electrochemical, optic, acoustic and thermal with the help of signal transducer. There is considerable demand for the rapid low-cost determination of food compounds, particularly in the food and beverage industry. The most widely used tests are based on volumetric, gravimetric and instrumental procedures in food analyses. Biosensors are interesting tools over standard methods, notably with respect to rapidity, ease-of-use, cost, simplicity and portability compared to other methods. By appropriate sensor selection, it is possible to detect a particular target compound. Systems in which based on electrochemical and enzymes, and particularly the use of oxidase-based systems as biosensors, play a dominant role commercially. It is believed that the use of biosensors based on cell tissue or microorganisms will be limited due to late response times. Biologically based sensors can be used in quantitative determination of alcohol, sugars, caffeine, lysine, phenolic compounds which are important for food quality and process control in food production. This review discusses an overview of the different biological recognition elements and the various transduction systems that have been used to design biosensors for food compounds detection.

Keywords: Biosensors, Enzyme, Analyses, Food compounds

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15-17 May 2017

Physical and Sensory Characteristics of Cakes Produced with Coffee Silverskin as Fat Replacer

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Abstract

Nowadays, food industry focuses on the production of reduced fat/energy foods with sensory quality that is comparable to that of conventional products. The way to avoid health concerns of consumers without losing taste of eating is to replace fat with dietary fibre. In this study raw and leached coffee silverskin (CS) has been studied as a potential fat substitute in cake and the effects of the replacement of 20, 25 and 30 g/100g of vegetable fat by CS on appearance, colour, texture and sensory quality of cakes were evaluated. Specific volume and weight loss values of cakes did not show significant difference with increasing CS. Addition of CS decreased, L* and b* values of crumb whereas, a* and ΔE^* values increased. Hardness and chewiness of the cakes were increased, but springiness and cohesiveness decreased by the addition of CS. Cakes with leached CS were found to be softer, had higher springiness and cohesiveness values and lower chewiness value compared to cakes with raw CS. Cakes with leached CS had higher moisture content compared to other cakes and 30% leached CS cake had highest moisture content. Descriptive sensory analysis of cakes were carried out using a defined vocabulary of 11 terms related to appearance, manual texture, oral texture and flavor and principal component analysis (PCA) revealed seven cake samples with the largest sensory variation. Sensory acceptability of cakes with leached CS found to be higher compared to cakes with raw CS and cakes with leached CS showed similarity for crumb porosity, cohesiveness, moistness, oiliness and sweetness compared to control cake. Usage of CS in cakes found to be feasible based on the physical and sensory results and replacement of 30 g of /100 g of vegetable fat by CS improved the physical and sensory quality of the cakes.

Keywords: cake with coffee silverskin, fat replacement, sensory analysis of cakes

Using of Chickpea Flour and Celery Powder in Cookies

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Abstract

In this study, using of chickpea flour (CF; 0, 50, 100%) and celery powder (CP; 0, 5, 10%) in cookie formulation was investigated. The cookies were produced according to AACC Method No.10-54. The orange peel powder (OP) was also used in formula (2%) as flavoring. The CP and OP samples were obtained by drying the raw materials in microwave oven at 320 W for 20 min and grinding by Waring blender. The cookies were evaluated in terms of spread ratio, chemical (ash, dietary fiber), textural (hardness; TA-XT Plus, UK), color (L*,a*,b*; Lovibond RT300, UK) and sensorial properties. Total dietary fiber (TDF) content of CF was found as 17.4%, which was higher than that of wheat flour. The CP and OP had also high TDF contents; 37.4% and 35.7%, respectively. The TDF content of cookies increased with increasing CF and CP levels and reached to 15.2% by using 100% CF-10% CP. Spread ratios were lower in CF added cookies than control, except the cookie with 50% CF-10% CP which had higher spread ratio than control. The L* values decreased while a* and b* values increased by using CF and CP in cookie formula as a result of darker color of these ingredients than that of wheat flour. Hardness value increased with increasing CF and CP levels. The cookie with 50% CF-5% CP had hardness value close to control cookie. In addition, the cookie with 50% CF-5% CP had highest sensorial scores in terms of color, taste, appearance and crispness. The cookie with 100% CF had higher sensorial scores than control cookie. As a result, high fiber cookies with acceptable quality properties were produced by using chickpea flour and celery powder, and the gluten-free cookie with high sensorial score was also obtained with 100% CF which was proper for celiac people.

Keywords: Chickpea flour, Celery powder, Cookie, Gluten-free

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Study on the Polymorphism of MSTN gene in *Salmo trutta*, *Dicentrarchus labrax* and *Oreochromis aureus*

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Abstract

Determination of restriction fragment length polymorphisms (RFLP) of the exon 1, exon 2 and exon 3 regions of the myostatin genes in *Salmo trutta*, *Dicentrarchus labrax* and *Oreochromis aureus* genomes were aimed in the study. The genomic DNAs were extracted from the tissue samples collected from a total 75 fish. The DNA samples were then used for amplification of exon 1-3 regions of myostatin gene (390, 435 and 342 bp, respectively) via PCR using specific primers for each exon region. The DNA bands of exon 1–3 regions of the myostatin gene belonging to *Oreochromis aureus* genome were observed, whereas no DNA bands of the other two fish species were observed in agarose gel. (This work was supported by the Scientific Research Projects Commission of Cukurova University (Project number: SUF2013BAP24)).

Keywords: *Salmo trutta*, *Dicentrarchus labrax*, *Oreochromis aureus*, Myostatin, RFLP



Organic Agricultural Approaches in Phytosanitation

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Abstract

Human beings have realized the damage they cause in living and non-living environment they live together and their own habitat through the agricultural activities they lead. Thus, new agricultural approaches which are compatible with the nature, using the resources correctly, aiming sustainable development have started to spread to the whole world. Organic Agriculture has gained more importance in recent years due to the problems such as those in agricultural areas, healthy and satisfactory food production problem, environmental pollution and natural balance disruption. Organic agriculture is a production way controlled and certificated in every stage. Pests constitute the leading problem in plant production. Many methods can be used against pests causing economic damage. In organic agriculture, most of the methods used against pests causing economic damage were formed by the leading studies made. But due to the negative aspects of the synthetic chemicals used in recent years, investigation and use of the struggling methods which constitute an alternative to this struggle and may be used in organic agriculture have gained importance. Organic agricultural approaches in phytosanitation and the methods which can be applied were covered in this study.

Keywords: Organic farming, pesticide, insect

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Retrotransposon Analyses in Endemic *Pinus nigra* ssp.

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Abstract

Pinus nigra Arn.ssp. *pallasiana* (Lamb.) Holmboe (Anatolian black pine) is the second most widespread coniferous pine species in Turkey after the red pine. Transposons, mobile genetic elements, are capable of jumping from their positions to others within the genome and constitute 50-90% of plant genomes. Transposon studies allow significant information about species and even evolutionary processes in plants. Retrotransposons are a subclass of transposons and they are also subdivided as follows: autonomous and non-autonomous based on whether or not a particular insertion encodes all the proteins needed for its own transposition. In this study, *BAGY2*, *Nikita* and *Sukkula* retrotransposon movements were investigated in the stems and needles of endemic *Pinus nigra* ssp. *pallasiana* var. *pyramidata* and var. *Seneriana*. Polymorphism ratios among samples were analysed by a transposon-based marker technique: Inter-Retrotransposon Amplified Polymorphism (IRAP). Polymorphisms were calculated as 0%-11% for *BAGY2*, 0%-56% for *Nikita* and 0%-76% for *Sukkula* between stems and needles in var. *pyramidata*. There were no polymorphisms in var. *Seneriana* in terms of these three retrotransposons movements. Moreover, homomorphic band profiles observed among all needle samples in *BAGY2*, *Nikita* and *Sukkula* analyses both var. *pyramidata* and var. *Seneriana*. In this research, we detected the movements of three retrotransposons (identified in barley) in two endemic *Pinus* varieties. The obtained results are expected to contribute to increase knowledge about these endemic plants and even the evolutionary relationships between angiosperms and gymnosperms.

Keywords: Endemic *Pinus* varieties, mobile elements, *BAGY2*, *Nikita*, *Sukkula*

Determination of the Effect of Solvent Type on the Antioxidant Activity of Artichoke Leaf (*Cynara scolymus* L.) Extract

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Abstract

In recent years, there have been an increasing number of studies on the conversion of food and agriculture industry wastes which are considered as a source of social, economic and environmental problems into products with high added value such as food ingredients, medicine components and cosmetic preparations. It has known that during the processing of raw materials in fruit and vegetable processing facilities, up to 60% of the weight of the raw materials used are constituted of plant wastes such as shells, leaves and stems that have antioxidant activity, are rich in phenolic compounds, and contain bioactive compounds with anti-oxidant, anti-allergic, anti-viral and anti-microbial properties. In addition, process parameters such as the extraction method, the type of solvent used, temperature, etc. can have an important impact on the yield of bioactive components and the efficiency of extraction. It is believed that determining process parameters for the recovery of bioactive compounds from such wastes will contribute to the discovery and development of new commercial products in the food, medicine and cosmetic industries as alternatives to synthetic ingredients. In this context, this study aims to determine the effect of solvent type on the antioxidant activity of extracts obtained from artichoke (*Cynara scolymus* L.) leaves produced as waste during the consumption of fresh or canned artichoke, which widely grown in the Aegean Region. The total phenolic substances and antioxidant activities were assessed in extracts from fresh artichoke leaves collected during the harvest period. Extracts were obtained through the maceration method by using methanol, chloroform, hexane, butanol and aqueous solutions. It was determined that in waste artichoke leaf extracts, chloroform and methanol were effective in ensuring high phenolic substance content (2873.75 mg GAE/L in chloroform; 1270.90 mg GAE/L in methanol) and antioxidant activity (93% in chloroform; 99% in methanol), while extracts obtained using hexane had lower total phenolic substance content (778.77 mg GAE/L) and antioxidant activity (82%). This study results have shown that obtaining high phenolic substance content and antioxidant activity from waste artichoke leaf extracts through the maceration method is possible by using chloroform and/or methanol.

Keywords: Artichoke, extraction, antioxidant activity

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Evaluation of the chemical control applications of producers in pome-fruit (apple, pear, quince) orchards of Korkuteli county in Antalya of Turkey

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Abstract

In this study, the high-scale pome fruit producers in Korkuteli were investigated and evaluated in terms of agro-chemical applications. A detailed questionnaire was applied to the forty producers (20 apple producers, 15 pears producers and 5 quince producers) in order to have information about their chemical contents and control strategies. The total 1004 da of fruit production areas in Korkuteli center, Bayat and Yazır villages were surveyed and determined that 89.9% of the producers applied 15-20 times chemical applications for each growing season, 6% of them applied 10 times chemical applications, 1% of them applied 20-30 times chemical applications and rest of them (3.1%) used 5-6 chemical repeats. During all per growing season, producers expend between 5000 and 40000 Turkish liras. The frequently observed diseases were apple scab, pear rust and fire blight. The most common pests were determined to be *Cydia pomonella* on apple, *Cacopsylla pyricola* on pear and red mites on apple and pear. It was determined that the producers pay attention on the pesticide re-treatment interval and number. They pay also attention to the final treatment time before harvest. The producers have enough awareness about the residue on foods and harmful effect of pesticides. Ninety per cent of the producers have insufficient information about biocontrol of diseases and pests, but they use the forecasting. It was determined that the producers provide pesticides from the agrochemical dealers based on dealers' recommendations.

Keywords: Antalya, Korkuteli, Chemical Control, Pome Fruits

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Disease problems of the vegetable and fruit producers of Elmalı county in Antalya province of Turkey

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Abstract

In this study, the disease problems of vegetable and fruit production in Elmalı county of Antalya province were investigated, and the success of present control applications which are used by producers was evaluated. The disease samples were obtained from the open field and greenhouse of total 52 producers. A detailed questionnaire was applied to the producers in order to determine disease and pest problems during growing seasons in the center of Elmalı county and Eskihsar village. Tomato, pepper, eggplant, cucumber, carrot were determined to be the most commonly growing crops. Bean, lettuce, cabbage, squash and leek were also determined to be less commonly growing crops. *Fusarium* spp., *Rhizoctoni* spp., *Pythium* spp. and *Phytophthora infestans* were the most common causal agents of tomato root rot diseases. Eggplant root rot disease (*Fusarium* spp.), carrot *Fusarium* spp., lettuce mildew (*Bremia lactucae*), pepper root-crown blight (*Phytophthora capsici*) and squash downy mildew (*Pseudoperonospora cubensis*) were commonly seen diseases. Walnut antracnose (*Gnomonia leptostyla*) in all walnut plantations in Elmalı was frequently detected as a fungal disease. Apple scab (*Venturia inaequalis*), powdery mildew (*Podosphaera leucotricha*) and fire blight (*Erwinia amylovora*) were common diseases of apple. The producers in Elmalı stated that agro-chemical applications were commonly preferred for these disease controls. The chemical applications were repeated 4-5 times for control of each one of the disease, and the recommended doses stated on the labels of fungicides were frequently followed by producers. They were also point out that they have insufficient information about the content and mode of action of the fungicides. Based on our detailed surveys and lab works, the fungal diseases were very common and economically important diseases, and producers preferred the pesticide use instead of other control strategies, especially cultural methods.

Keywords: Antalya, Elmalı County, Vegetable and Fruit Diseases

Physical Properties of Refrigerated Anchovy Fillets Dipped with Natural Antioxidant Extract Isolated from Shrimp Shells

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Abstract

In this study, the effects of natural antioxidant extract isolated from the shells of giant red shrimp (*Aristaeomorpha foliacea*) on color properties of anchovy (*Engraulis encrasicolus*) fillets refrigerated storage were examined. Fish fillets were dipped into the following solutions as different treatments for 5 min: control containing only distilled water, 0.1 % and 0.5 % (w/v) crude antioxidant solutions and 0.005 % BHT solution. Then anchovy fillets were stored in the refrigerator during 18 days. The control and treated fillet samples were analyzed periodically for color (L^* , a^* , b^*) analysis. Chroma and hue values were calculated. It was determined that shrimp shell extract (especially 0.5% group) and BHT has a positive effect on L^* and a^* values of anchovy ($p < 0.05$). b^* value of BHT added anchovy fillets was not change during storage, which verified the positive effect of BHT on these fillets. Significant difference was detected between chroma and hue values of groups ($p > 0.05$). Chroma value was the highest in group containing 0.5% of shell extract at the end of storage.

Keywords: Physical changes, Giant red shrimp, Shrimp shell, Anchovy

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Drying Meat And Meat Products

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Abstract

Meat as a human food is a product obtained from a certain cut, shredding and processing of skeletal muscle and internal organs of cattle, sheep, goats, pigs, poultry, aquatic products and various hunts animals. Meat is an important food substance contains high biologically valuable proteins, B group vitamins and minerals and it is part of a high nutritional and healthy diet. However, since meat has high water activity, it is a suitable medium for microorganisms to easily develop and produce, and a suitable material for food degradation. Due to the short shelf life of meat; fast, simple, inexpensive, healthy and reproducible preservation methods are needed. Drying is one of the oldest methods for preserving food. Drying in the food industry is defined as a process of reducing the water content of raw, processed or semi-processed solid, liquid, semi-liquid foods to a certain level. Drying of meat is allows long period storage and allows the production of new products. The meat products obtained by the meat drying are also preferred by consumers since they have a special texture, flavor and taste. The products to be dried should be at a low microbial level (no more than 10^2 - 10^4 cfu/g for each product). The pH value of the products should be between 5.5-5.8 and the water activity should be below 0.89. Meat selected for the drying process should be avoided from DFD (dark-firm-dry) meats. In order to increase the penetration of salt into meat, the amount of connective tissue should be reduced as much as possible. Pastırma in our country is widely consumed in dried meat products in the world, examples are odka, qwanta, kilishi, biltong in African countries and charque in Brazil and other American countries.

Keywords: Meat, drying, dried meat products

Response of Sunflower, Safflower and Cotton to Sublethal Glufosinate Rates at Seedling Stage

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Abstract

Glufosinate ammonium is one of the most preferred total herbicide used in agricultural and non-agricultural lands such as, orchards, road sides, railways, pavements and canals. The herbicide blocks glutamine synthetase that is responsible from glutamine production and declining of ammonium in plants. Undesired movement of glufosinate ammonium during the application (a process called drift) can cause severe injury on sensitive plants when the plants are sowed adjacent to the fields. Sunflower, safflower and cotton are important industrial crops that seeded near the lands applied glufosinate. Seedling stage of plant is considered as more sensitive to herbicide drift than subsequent growing stages. Growth chamber experiment was conducted to determine efficacy of glufosinate drift rates on sunflower, safflower and cotton seedlings at 25°C ± 2°C and 12 h light-dark photoperiods. Glufosinate ammonium at the rate of 75, 37.5, 18.75 and 9.375 g active ingredient (ai) ha⁻¹ was applied using spray chamber at a spray volume of 200 L ha⁻¹. Injury caused by herbicide drift rates was visually determined 28 days after treatments (DAT). Phytotoxicity increased as drift rates of glufosinate ammonium rised from 9.375 to 37.5 g ai ha⁻¹ 28 DAT. At the highest rate of the herbicide safflower and sunflower seedlings died, but cotton seedlings did not. Safflower was the most sensitive test plant to the herbicide, and sunflower followed it. Although cotton injury was very severe, growing point was not killed by the higher rate of glufosinate ammonium and remained green.

Keywords: Glufosinate ammonium, drift rate, sunflower, cotton, safflower



Early Flower Development Schedule in *Crataegus tanacetifolia* (Lam.) Pers.

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Abstract

The paper reports a study of early flower development schedule in *Crataegus tanacetifolia* (Lam.) Pers., endemic to Turkey. The samples analyzed by light and scanning electron microscope. The first sign in appearance of a flower is differentiation of apical meristem as a roundish bulge. It comprises of consecutive cell layers and afterwards transforms into the floral meristem which gives rise to floral organ primordia in advanced stages. 20 stamen primordia differentiate as roundish bulge from the sides of floral meristem. Subsequently, stamen primordia start to stretched and firstly filament, then anther differentiates. After a short time the stamen initiation, 5 carpel primordia differentiate from the floral meristem. In following stages, carpel primordia lengthen and form an ovary with 5 loculi. During the ovary formation, 5 style occur on the ovary and then the stigma evolves out of styles tip.

Keywords: apical meristem, *C. tanacetifolia*, floral meristem, flower ontogeny, developmental biology



A Study To Determine Yield And Yield Component Interactions On Icarda Spring Chickpea (*Cicer Arietinum L.*) Varieties In Çukurova Conditions

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Abstract

This study has been conducted in years 1998 and 1999 on research fields of Çukurova Agricultural Research Institute, at Doğankent location in order to identify yield and yield component interactions in chickpea (*Cicer arietinum L.*) in Çukurova conditions. According to highest and lowest values accumulated during three years of the study at Doğankent location; yield values change in between 246.5 – 39.74 kg/da, flowering period change in between 144.0-137.8 days, plant height change in between 76.17-51.83cm at Doğankent.

Keywords: Spring Chickpea, Varieties and Yield



A study on the determination of some *Bemisia tabaci* (Genn.) (Hemiptera: Aleyrodidae) populations by Polyacrylamide Gel Electrophoresis

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Abstract

The *Bemisia tabaci* is one of the most devastating pests of agricultural crops and ornamental plants in the world, having many biotypes. Biotypes can be distinguished from each other by biochemical methods as well as by molecular methods. Differences in esterase isoenzyme profiles were used to describe the biotypes. In this study, *Bemisia tabaci* populations collected from various field of Aegan and Mediterranean Regions during 2004-2005 was examined using by polyacrilamide gel elektrophoresis (PAGE) method. Considering the esterase isoenzyme patterns of populations, it was determined that there were two different groups. Populations in the first group (B biotype) were mostly dyed more strongly, whereas populations in the second group (Q biotype) were poorly dyed. Our results clearly showed that in populations there were two genetic types in terms of esterase activity. The esterase profiles obtained in PAGE showed that the biotypes B and Q could be separated by this method.

Keywords: *Bemisia tabaci*, biotype, PAGE, esterase, genetic.

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Determination Feed Value and In vitro Organic Matter Digestibility of Canola Silage

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Abstract

Canola seeds are mentioned frequently because of its contribution to the biodiesel production. Hays, silages, straws, stubble and stovers of canola are used as roughage source in ruminant nutrition. The aim of this study was carried out to determine the effects wheat bran as silage additive on the fermentation and in vitro organic matter digestibility of canola silage. Canola harvested and ensiled in silos type of glass containers. Each application consist of 3 parallel. Chemical, microbiological analyses and in vitro cellulase method were conducted on the silage which was opened on the 60th day after it was ensiled. According to the analysis; control, %5 wheat bran and % 10 wheat bran groups was 14.31, 14.71 and 15.66; ammonia-nitrogen 91.53, 85.43 and 55.34; metabolize energy 7.94, 8.27 and 8.51; organic matter digestibility 61.45, 63.93 and 62.92 respectively. In conclusion, addition of wheat bran can increase dry matter content of canola silage.

Keywords: Canola silage, silage additive, silage quality, in vitro, OM digestibility

Genetic analysis of Verticillium wilt resistance in Cotton

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Abstract

The hiking problem of Verticillium wilt (VW) in cotton incurs heavy economic losses around the world as well as in Turkey. The first step to cope with this problem is identification of tolerant/resistance lines/cultivars from the existing germplasm at regional scales. Marker-assisted selection (MAS), which is the selection for target traits based on molecular markers that are closely linked to quantitative trait loci (QTL), is a promising way to facilitate selection for improvement of VW resistance. Numerous studies have been reported mapping of QTLs for VW resistance in cotton. The objective of the current study was to validate some of those identified markers in cotton cultivars. Fifty different cotton cultivars (BA-151, PG518-11, DP-499, Tamcot SP37H, BA-525, PG519-19, IH-4028, Tamcot Sphinx, Carisma, PG520-7, IH-20, Taşkent-1, Çukurova 1518, PG-2018, IH-26-K-5, Taşkent-3, Gloria, PG-300, IH-27-TYL, Teks, Lydia, PG-310, IH-82-K-3, VD-4, Acala-1517V, PG-53-KT-2, IH-82-Y-1, Şahin 2000, BA-308, PG-53-YT-11, MCH-578, Nata, BA-320, Prema, Natalia, Lacata, BA-811, ST-468, PG424-1, Carmen, CIM-496, Tamcot Camd-es, PG426-4, N-M 503, PG510-15, PG510-7, PG511-7, N-87, Julia and Maydos Yerlisi) collected from various research institutes were investigated in the current study. After phenotypic valuations of Verticillium inoculations, genomic DNA was extracted and polymerase chain reaction (PCR) was conducted to amplify the selected SSR markers. Primer information was obtained from the Cotton Marker Database (www.cottonmarker.org). PCR was conducted in a total volume of 25µl, containing 2.5µl 10X PCR buffer (50 mM KCl 10 mM, Tris-HCl 1.5 mM MgCl₂, pH 8.3), 2µl MgCl₂, 0.5 µl dNTP, 0.5µl of each forward and reverse primer, 0.2µl Dream Taq DNA polymerase, 16.8µl sterile water, and 2µl DNA. Reactions were performed with 3 min at 94 C° for denaturation, followed by 40 amplification cycles (1 min at 94 C°, 45 s at 50 C°, and 1 min at 72 C°) and 10 min at 72 C° for final extension in BioRad Thermal Cycler™. Final PCR products were analyzed on 3% agarose gel. The amplified bands were scored as 0 or 1 for absence and presence, respectively. Dendrograms were constructed based on phenotypic and genotypic data using UPGMA on JMP software (version 10; SAS Institute). The validated markers can be used in the further breeding programs.

Keywords: *Verticillium dahlie* Kleb., PCR, SSR marker, UPGMA

Acknowledgement: This study was partially supported by Scientific and Technological Council of Turkey (TUBITAK) Project No: 214O086.

Fungal and Bacterial Antagonistic to *Verticillium dahliae* Kleb in Cotton Field

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Abstract

Among the soilborne pathogens of cotton (*Gossypium hirsutum* L.) *Verticillium dahliae* Kleb, cause the main disease problems. Control of this disease is limited to heat treatment, or fumigation with broad-spectrum biocides such as methyl bromide. Now, methyl bromide is being phased out. This fact will lead to a further accumulation of microsclerotia in soil. An environmentally friendly alternative to protect roots against fungal pathogens is rhizobacteria-mediated biological control. An environmentally friendly alternative to protect roots against fungal pathogens is rhizobacteria-mediated biological control. However, only a few biocontrol products are currently on the market and it is necessary to find more efficient biocontrol bacteria. Previous results have been reported in controlling *V. dahliae* using antifungal rhizobacteria. Fungi and bacteria with antagonistic activity toward plant pathogens play an essential role in plant growth and health. High proportion of fungi antagonistic toward the pathogen *V. dahliae* was found for bulk and rhizosphere soil at all sites. A plant- and site-dependent specificity of the composition of antagonistic morphotypes and their genotypic diversity was found. The diversity of rhizosphere-associated antagonists was lower than that of antagonists in bulk soil, suggesting that some fungi were specifically enriched in each rhizosphere. A broad spectrum of new *Verticillium* antagonists was identified, and the implications of the data for biocontrol applications are discussed. Bacterial antagonists of *V. dahliae* *Bacillus subtilis*, *Pseudomonas fluorescens* and *Xanthomonas maltophilia* are strong antagonists. Like many researchers we think that lytic enzymes and siderophores involved in the inhibition of growth.

Keyword: *Verticillium dahliae*, Antagonist, Pathogens, Fungi, Bacteria.

Relationship Between *Macrophomina phaseolina* and *Cylindrocopturus adpersus* in Sunflower

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Abstract

Macrophomina phaseolina has a wide host range and is responsible for causing losses on more than 500 cultivated and wild plant species. So far it has been reported to cause disease on 67 economic hosts including field crops, pulses, flowers and vegetable have been reported. Infection on sunflower was first reported from Sri Lanka in 1927 and in 1982 it was reported from sunflower field in Pakistan. The fungus is reported to be soil, seed and stubble borne. The fungus can survive for more than 10 months under dry soil conditions. The severity of the disease is directly related to the population of viable sclerotia in the soil. The pathogen generally affects the fibrovascular system of the roots and basal internodes. The parasitic fitness of a facultative soilborne pathogen before invading the host is linked with its ability to compete for its survival, utilization of organic sources and colonization in the host root rhizosphere by competing other microorganism in the vicinity. Researchers reports the isolation of *M. phaseolina* from the plants parasitized by larvae of the stem weevil and from the stem weevil larvae. Knowledge of charcoal rot symptomatology and methods for detecting *M. phaseolina* in sunflower plants parasitized by *Cylindrocopturus adpersus* larvae (stem weevil larvae) will be valuable for diagnosing charcoal rot and selecting breeding lines for resistance to *M. phaseolina* in the field.

Keywords: Charcoal rot, *Macrophomina phaseolina*, *Cylindrocopturus adpersus*, sunflower.

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Occurrence of Viruses on Rocket Crops in Samsun, Turkey

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Abstract

Rocket (*Eruca sativa* L.), a member of the Brassicaceae family, has gained great importance as a salad vegetable and spice. The economic potential of rocket salad is steadily increasing in recent years. A survey of rocket virus diseases was conducted in the major rocket production areas in Samsun. The symptomatic and asymptomatic samples were collected from rocket fields and assayed for Turnip mosaic virus (TuMV), Cauliflower mosaic virus (CaMV), Beet western yellows virus (BWYV), Cucumber mosaic virus (CMV), Turnip yellow mosaic virus (TYMV), Tobacco mosaic virus (TMV), and Tomato spotted wilt virus (TSWV) using Double antibody sandwich- Enzyme-linked immunosorbent assay (DAS-ELISA). The results of serological tests showed that 5.3% of these samples were infected with only CMV. In the present study, TuMV, CaMV, BWYV, TYMV, TMV, and TSWV were not detected in tested rocket plants from Samsun. To our knowledge, this article represents the first report of CMV in rocket in Samsun, Turkey.

Keywords: Brassicaceae, Rocket, Viruses, CMV

Impact of Vacuum Assisted Microwave Drying on Hydroxymethylfurfural Content in Bee-pollen

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Abstract

The aim of this study was to determine the effect of microwave power levels (300 W, 450 W, 600W, 900W) and vacuum pressure levels (67.5kPa, 50.5kPa) during the vacuum assisted microwave drying (VAM) on hydroxymethylfurfural (HMF) content of the bee-pollen. Pollen used in this research was polyfloral bee pollen collected from center and nearby cities of Antalya. The vacuum pressure levels did not significantly influence the drying time of the bee-pollen compared to the microwave power levels. Increasing the microwave power level caused decrease in the drying times. After drying for 8 min at vacuum pressure of 67.5 kPa, the moisture contents at power levels 300 W, 450 W, 600 W and 900 W were 11.4, 9.9, 7.6 and 5.2%, respectively. However after 8 min of drying at power level 600 W, the moisture contents of the samples at vacuum pressures of 67.5 and 50.5 kPa were 7.6 and 7.7%, respectively. Increase of microwave power levels caused increase in HMF content of the bee-pollen. However the vacuum pressure levels did not significantly influence the HMF content. Hydroxymethylfurfural content was determined by reflectometric method using a RQflex® plus 10 Reflectoquan Merck with HMF test strip. Bee-pollens were dried at 50.5 kPa until the residual moisture content dropped to below 8% v/w, the HMF contents at power levels 300 W, 450 W, 600 W and 900 W were 3.3, 4.8, 6.3 and 8.1 mg/L, respectively.

Keywords: Bee-pollen, Vacuum assisted microwave drying, Hydroxymethylfurfural

Güneydoğu Anadolu Bölgesinde Pazarlanan Kurutmalık Üzüm Çeşitlerinin Bazı Kalite Özelliklerinin Belirlenmesi

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Özet

Ülkemiz, bağ alanı bakımından dünyada 4., üzüm üretimi bakımından ise 5. Sırada yer alan önemli bağcı ülkelerden biridir. Türkiye’de üretilen üzümün yaklaşık %56’sı çekirdekli %44’ü çekirdeksiz üzüm çeşitlerinden oluşmaktadır. Ülkemizde üretilen üzümlerin yaklaşık %50’si sofralık, %38’si kurutmalık, %9’u pekmez, pestil, sucuk, şıra ve %3’ü de şaraplık olarak değerlendirilmektedir. Bağcılık bölgelerimize göre üretim incelendiğinde; Ege Bölgesi’nde çekirdeksiz kuru üzüm, Marmara Bölgesinde sofralık ve şaraplık çeşitlerin, Akdeniz Bölgesinde erkenci sofralık çeşitlerin, Ortagüney ve Güneydoğu Bölgelerinde şaraplık, şıralık, sofralık, çekirdekli kurutmalık üzüm çeşitlerinin yetiştiriciliği öne çıkmaktadır. Güneydoğu bağcılık bölgesi, Türkiye üzüm üretiminin yaklaşık %17.9 ‘unu karşılamakta olup, sinonimleri ile birlikte 46’nın üzerinde yerel ve standart çeşidin üretimi yapılmaktadır. Bu çalışmada yörede yetiştiriciliği yapılan ve kurutulmuş piyasaya sunulmuş başlıca üzüm çeşitlerinden (Sultani Çekirdeksiz, Besni, Banazı Karası, Horoz Karası, Pozulkelp) örnekler alınarak, TS/3410 çekirdekli kuru üzüm ve TS/3411 çekirdeksiz kuru üzüm standartlarına göre bazı kalite kriterleri incelenmiştir. Elde edilen bulgulara göre kurutulmuş Sultani Çekirdeksiz üzüm çeşidinin 100 gr’da 230 tane ile çok iri sınıfında yer aldığı tespit edilmiştir. İncelenen çeşitlerden en yüksek kuru madde içeriğine sahip olanı %91.81 Brix ile Ağartılmış Besni-1, en yüksek nem kapsamına sahip olanı ise %18.24 ile Banazı Karası çeşidi olarak belirlenmiştir. 100 tane ağırlığı bakımından incelenen çeşitler içerisinde öne çıkan Ağartılmamış Besni-1 (164.94 g) olmuştur. Çeşitler çekirdek özelliklerine göre değerlendirildiğinde en iri çekirdekler Ağartılmış Besni-1 çeşidinden, ortalama en ağır çekirdekler ise Ağartılmış Besni-2 çeşidinden elde edilmiştir. Çekirdeklerinin toplam tane ağırlığındaki oranı bakımından en yüksek değere sahip çeşit Horoz Karası olarak saptanmıştır. Tanelerde bulunan çekirdeklerin çimlenme kabiliyetleri incelenerek kurutma koşulları bakımından çeşitler karşılaştırılmış ve en yüksek (%88.9) çimlenme kabiliyetine sahip çekirdeklerin Ağartılmış Besni-1’de bulunduğu görülmüştür. Elde edilen bulgular bir bütün olarak değerlendirildiğinde bölgede satışı yapılan tek çekirdeksiz çeşidin Sultani Çekirdeksiz olduğu ve çekirdekli çeşitlerden Ağartılmış Besni-1’in kuru üzüm kalitesi bakımından diğerlerinden daha üstün özelliklere sahip olduğu saptanmıştır.

Anahtar Kelimeler: Kuru üzüm, Kalite, Güneydoğu Anadolu Bölgesi



Development of Time-Temperature (TTI) Indicator with Betalains from Red Beet (*Beta vulgaris*)

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Abstract

Time temperature indicators (TTIs) are simple and easy to use devices informing consumers about the storage conditions of food products. The aim of this work was to develop a time temperature indicator (TTI) sensor based on a PVA and alginate polymer blend incorporated with betalains. The PVA/alginate hydrogel was prepared with a casting technique at a PVA/alginate ratio of 2:3 (v/v), with incorporation of betalain extracted from red beet (*Beta vulgaris*). The final pH of the hydrogel was adjusted to 9.5. Hydrogel was dried in vacuum oven (50mbar) at 50°C for 3 hours. The thickness of the film was about 0.03mm. The color parameters of TTI films were measured at four different temperatures (4, 25, 40 and 60°C) during seven days. The b* parameter showed the most significant variation compared to a* and L* parameters. The b* parameter data changed from the initial value of -9.6 to -9.0 at 4°C, to 1.28 at 25°C, to 6.8 at 40°C and to 12.6 at 60°C at the end of seventh day. At all temperatures except 4°C, the b* value significantly increased on the first day. Film indicator changed color faster (less than one day) at higher temperatures. The mechanical properties of the TTI films were established through stress/strain tests. The elasticity modulus, tensile stress and percent elongation were 6.317 MPa, 1.49 MPa and 51.7%, respectively. Scanning electron micrographs of the TTI film was also obtained.

Keywords: Time-temperature indicator, Betalain, Alginate, Red beet

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***Hippodamia (Adonia) variegata* (Goeze) (Coleoptera: Coccinellidae)'nın Pamuk Yaprakbiti, *Aphis gossypii* Glover (Hemiptera: Aphididae) üstünde bazı biyolojik özelliklerinin araştırılması**

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Abstract

Coccinellidae familyası üyelerinin büyük çoğunluğu tarımsal ürün zararlıları olan yaprakbitleri, kabuklubitler, kırmızı örümcekler, beyaz sinekler ve pek çok diğer zararlı türlerle beslendikleri için faydalı böcekler olarak adlandırılırlar. Bir çok türü biyolojik savaş uygulamalarında başarıyla kullanılarak önemli ekonomik ve çevresel fayda sağlamaktadırlar. Dünyada bu familyaya ait bugüne kadar 6.000 kadar tür tanımlanmıştır. Bir çoğunun biyolojik özellikleri ve biyolojik ajan olarak kullanılabilme potansiyelleri çok iyi bilinmemektedir. Bu çalışmada genel bir predatör olan *Hippodamia (Adonia) variegata* (Goeze) (Coleoptera: Coccinellidae)'nın pamuk yaprakbiti *Aphis gossypii* Glover (Hemiptera: Aphididae) üstünde gelişme, üreme ve canlı kalma oranı gibi bazı biyolojik özellikleri araştırılmıştır. Çalışma 25±1 °C sıcaklık, %65-70 orantılı nem 16:8 saatlik aydınlık şartlarında iklim odalarında yürütülmüştür. Çalışma sonunda avcının yumurta döneminin 3-4 gün sürdüğü, toplam gelişmesini 21.1 günde tamamladığı saptanmıştır. Ayrıca avcının ergin öncesi ölüm oranının %61 olduğu, yaşamı boyunca toplam 329 adet yumurta bıraktığı ve ortalama olarak da 8.55 adet yumurta bıraktığı bulunmuştur.

Keywords: *Hippodamia (Adonia) variegata*, *Aphis gossypii*, gelişme süresi, üreme oranı, canlılık oranı

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Optimisation of biomass production of *S.cerevisiae* from date's extract using response surface methodology design

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Abstract

A comprehensive study on the production of biomass of *S. cerevisiae* on medium optimized based on the extract of dates as the sole carbon source was performed in order to obtain a good yield of biomass. Response surface methodology based on the central composite design was applied to evaluate individual and interactive effects of the three main parameters (initial substrate concentration, initial pH and temperature) on the biomass production. Under optimal conditions of fermentation (the extract of dates (115g / L), pH (5.4) and temperature (32.9 ° C), *S. cerevisiae* produced, a significant amount of biomass and this after only 16 hours of fermentation. The optimum found being at the centre of the experimental field.

Keywords: Biomass, *S. cerevisiae*, Extract of dates, Optimization, Central composite design



Contribution to the upgrading of poultry feathers as an element of fungal fermentation medium

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Abstract

This work focuses on a contribution to the enhancement of poultry feathers microbiologically, using fungal strains isolated from soil of a chicken farm; for the production of keratinase, an enzyme of industrial interest, namely, feed, pharmaceutical and cosmetic industry. Indeed, the study focused after the isolation of keratinolytic fungal strains on the characterization of keratinase production in liquid fermentation medium at laboratory scale and optimal physicochemical conditions of this enzyme. Isolation yielded two keratinolytic molds. Presumptive identification based on macroscopic and microscopic study showed that these two isolates belong to the genera *Aspergillus* and *Absidia*. Both strains are cultivated in submerged medium or the sole source of carbon and nitrogen is feather meal and the production of the enzyme is estimated by assaying the keratinolytic activity. The results obtained revealed that '*Absidia sp.* gave better activity reached 28.8 U / ml after the eighth day of fermentation. Study of optimum pH and temperature of incubation showed that the *Absidia sp* keratinase produced have a pH optimum pH 8 and a temperature optimum of 50°C. Finally, the study of the effect of different concentrations of glucose shows that it has an inhibitory effect on the production of keratinase.

Keywords: chicken feather, recovery of waste, *Absidia sp*, *Aspergillus sp*, fermentation, keratinase, keratinolytic activity

Antifungal activity of aqueous and methanol *Calycotome* plant extracts (Algeria)**Radia Cherfia^{1*}, Imen Talhi¹, Mounira Kara Ali¹, Asma Milet¹,
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Abstract

The use of plants in modern agriculture medicine has two important consequences. The first concerns the need to use natural products rather than chemical ones. The second, concerns the high healthy benefits of plant secondary metabolites. *Calycotome spinosa* is a plant from Fabaceae family has found a traditional use in Algeria for the treatment of some diseases. The aim of the present work deals with the extraction of the aerial part of this plant, as well as the quantification of total polyphenols and flavonoids, while the rest deals with the evaluation of antifungal properties of aqueous and methanol extracts against durum wheat pathogenic fungi. The results of the determination of polyphenols and flavonoids were higher in both aqueous and methanol extracts with 80.35 ; 108.03 mg GAE/g and 50.87 ; 67.43mg QE /1g DM respectively. The obtained extracts were also evaluated for their antifungal activity against the isolated fungi from durum wheat. The results revealed that the two extracts exerted an important inhibition growth of the following pathogenic fungi: *Aspergillus sp*, *Alternaria alternata*, and *Alternaria solani* with inhibition percentage equal to 55%, 70 %, 80% respectively for aqueous extract and 50%, 50%, 70% respectively for methanol extract.

Keywords: *Calycotome* plant, Antifungal activity, durum wheat pathogenic fungi.



A Review on the Damage of *Bremia lactucae* and the Methods of Race Determination

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Abstract

Downy mildew of lettuce, caused by *Bremia lactucae* is a serious disease of lettuce and also is one of the major problems of fresh vegetable salad. *B. lactucae* is an obligate parasite, pathogen is spread quickly large areas during cool (5-17⁰C) and wet (100 % RH) the growing season, there are multiple races of the pathogen. So far, 32 (B11-B132) races of *B. lactucae* have been identified in the world. The International Bremia Evaluation Board (IBEB) has reported that races B11-15 of *B. lactucae* were not observed in commercial lettuce varieties in Europe for a long time. Therefore, resistance varieties to B116-32 races have been more demanded since 2014. Resistance has been overcome by the new races and resistant varieties has become susceptible after a short time. There are no studies on the status and races of *B. lactucae* in our country. In this review, information about the research dealing the race determination and the methods to be used have been given

Keywords: Lettuce, *Bremia lactucae*, Race, Downy mildew

Antioxidant Activity of *Centaurea Staphiana*

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Abstract

Reactive oxygen and nitrogen species, such as hydroxyl radical, hydrogen peroxide superoxide anion, nitric oxide and their biological metabolites also play an important role in carcinogenesis. Antioxidants can decrease oxidative stress induced carcinogenesis by a direct scavenging of Reactive oxygen species¹. Synthetic antioxidants have been widely used in the food industry to prevent oxidative damage. However, there has been concern regarding the toxicity and carcinogenic effects of synthetic antioxidants. Thus, it is important to identify new sources of safe antioxidants of natural origin². Since they may be used to protect humans from oxidative stress damage. In this study, Antioxidant activities of methanol, butanol, hexane, dichlorometane and water extracts of *Centaurea Staphiana* were tested against DPPH, ABTS, CUPRAC and FRAP methods. Total phenolic and flavonoid contents were determined using the Folin-Ciocalteu and AlCl₃ methods, respectively. The results showed that methanol and butanol extracts exhibited higher antioxidant capacity in CUPRAC method than the other extracts and standarts. All extracts results close to each other In DPPH assay. Hexane and dichlorometane extracts have better effect than the others in ABTS cation radical scavenging activity.

Keywords: Antioxidant, *centaurea staphiana*, oxidative stress

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Determination of organic acid and volatile fatty acid content in natural sweet chestnut from Giresun/Turkey origin

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Abstract

There are centuries old of sweet chestnut trees in natural forests of Giresun/Turkey. In this study, organic acid and volatile fatty acid component were studied in chestnut fruit collected from chestnut trees grown within the boundaries of Giresun province. For this purpose, a total of 10 chestnut samples were collected from different regions of Giresun province. The organic acid composition of the chestnut was determined by high performance liquid chromatography (HPLC). Volatile oil components were determined by gas chromatography-mass spectrometry (GC-MS). Five different of organic acids were investigated in chestnut samples. These are oxalic, quinic, maleic, citric and succinic acid. According to the results of the research, oxalic acid and citric acid were found at the highest concentration of organic acid in chestnut samples. Oxalic acid and citric acid were detected in a range from 0.70-5.20 mg mL⁻¹ in 10 chestnut samples and 0.488-1.523 mg mL⁻¹ in 7 chestnut samples, respectively. Quinic acid was found in a range from 0.479 and 0.053 mg mL⁻¹ in only two chestnut samples. Maleic acid in 8 of 10 chestnut samples have the lowest concentration in a range from 0.006 to 0.091 mg mL⁻¹. Succinic acid was detected in a concentration range from 0.192-2.328 mg mL⁻¹ in nine chestnut samples. Limonene and terpinolene(TPO) determined as two important essential oil components in GC-MS analysis of chestnut samples. TPO was observed as the highest amount component in chestnut samples. Organic acids may have a protective role against various diseases due to antioxidant activities. Therefore, it is important to determine organic and volatile fatty acids and their quantities in chestnut.

Keywords: Chestnut, organic acid, volatile fatty acids, HPLC, GC-MS.

Acknowledgement: This work was supported by Giresun University Research Fund (Project No: FEN-BAP-A-200515-60).

Determination of Isoflavones in various food samples by High Performance Liquid Chromatography

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Abstract

Daidzin, daidzein and genistein of isoflavone have determined in nuts, dried fruits and vegetables by high performance liquid chromatography (HPLC). The amount of the aqueous phase, amount and type of the organic phase and the total amount of the extraction solution used in the extraction procedures were optimized by exploring. Subsequently, time and revolutions per minute of centrifugation were studied from extraction conditions. The analytical parameters were determined under optimum conditions. The detection limits and quantification limit, respectively was evaluated as 0.1 mg L⁻¹ and as 1.0 mg L⁻¹ for daidzin, daidzein and genistein. The relative standard deviation of method was determined $\leq 3\%$ (n=21) and the calibration curve was worked in the range 1-100 mg L⁻¹. The developed method was applied on almonds, hazelnuts, peanuts, dried eggplant, zucchini, beans and peppers, dried apricot and grape varieties obtained from Sivas centrum. The total isoflavone concentration in the samples was determined in the range 9.6 - 469.1 $\mu\text{g g}^{-1}$.

Keywords: Isoflavone, Daidzin, Daidzein, Genistein, Extraction, HPLC

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Traditionally Produced Bitter Orange Sour as a Salad Sauce

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Abstract

Citrus aurantium L. (commonly known as sour or bitter orange) produced largely, especially in Çukurova region of the southern part of Turkey. It has long been used in food industry as an ingredient of liqueurs and marmalades, and its extracts have also been employed in medicine. Recently, products containing sour orange have been exploited for the production of ephedrine-free dietary supplements for weight loss and appetite control. There is also a growing interest in bitter orange products due to the richness in different classes of bioactive compounds such as synephrine alkaloids which showed controversial effects on blood pressure and heart rate, limonoids and phytosterols and flavonoids which are associated with anticancer activity. However, due to its sour and bitter taste, it has not been used as an edible fruit in homes. Only in southern part of Turkey, it is used as bitter orange sour in salads due to its sour taste instead of lemon juice. It is also used in some traditional Turkish foods such as “Sarma”, “Dolma”, “Köfte” and etc as an aroma component and the peel of the fruit is used in jam production. Bitter orange sour is made by juicing the product and then cooking the product without adding any ingredient. This study is aimed to emphasize possible health benefits of bitter orange sour and to generalize the use of this health promoting foodstuff in overall the Turkey.

Keywords: Traditional salad sauce, Bitter orange sour, Salad dressings, Concentrate

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Effects Mixing Time on Physical and Chemical Properties of Manna Bar

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Abstract

Manna bar is a typical Iraqian-Iranian confectionary that made of manna, glucose syrup, sugar, egg white, cardamom and nuts (pistachio, walnuts, and almond). Manna bar resembles French nougat, Italian torrone, and Spanish turrón, but produced from different materials, process and had different textural attributes. Manna obtained from leaves and branches of the gallnut and oak trees harvested from end of May to end of August, depending on climate of the region. The aim of this research was to determine the influence of mixing time (10, 20 and 30 min) on the quality of manna bars during the production at constant cooking time (15 min) and cooking temperature at 100°C. This study was carried out for production of manna bars and investigating its properties. The used raw materials for producing manna bars in this study were manna, glucose syrup, egg white and cardamom. The analyses made in this study were moisture content, pH value, color and textural properties. In this research, increasing mixing time decreased moisture content and brown index but increased pH value. According to the texture profile analysis (TPA), different behavior was observed at different mixing time. Increasing mixing time increased hardness, adhesiveness, cohesiveness, gumminess and chewiness values, but not springiness. It was reduced by mixing time. During the mixing, moisture content reduced from 13.89 to 13.11%, Hunter a* value from 4.66 to 2.67, Hunter b* value from 12.96 to 8.30, YI 34.83 to 20.43, and springiness from 0.38 to 0.31%. However, pH value increased from 5.92 to 6.34, whereas hardness from 181 to 279g, adhesiveness from -0.97 to -0.44 g×s, cohesiveness from 0.31 to 0.32%, gumminess from 57.40 to 89.98 and chewiness from 22.37 to 34.75g. This study showed that long mixing time improved the physical and chemical properties of manna bars.

Keywords: manna, manna bar, texture, color, mixing time



Biocide Resistance of *Enterococcus* Isolated from Various Food Samples

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Abstract

In the present study, 79 strains of *Enterococcus* species (47 *E. faecium*, 11 *E. faecalis*, 8 *E. hirae*, 4 *E. gallinarum*, 4 *E. avium*, 3 *Enterococcus* spp., 2 *E. durans*) isolated from 132 various food samples (40 fermented meat, 50 cheese, 18 raw chicken, 13 raw milk, 11 raw meat) were examined for phenotypic tolerance to six biocides (benzalkonium chloride, chlorhexidine, triclosan, hexachlorophene, sodium hypochlorite, povidine iodine). Biocide resistance of *Enterococcus* isolates were detected by the MIC's (Minimum Inhibitory Concentrations) using the broth microdilution method. The MIC's of benzalkonium chloride, chlorhexidine, triclosan, hexachlorophene, sodium hypochlorite were range 0.5-512 µg/ml. The MIC's of sodium hypochlorite was range 781µg/ml-50 mg/ml. The MIC's of povidine iodine was range 6250mg/l-50 g/l. 21 (26.5%) *Enterococcus* isolates were found to hexachlorophene, chlorhexidine, triclosan, benzalkonium chloride MIC \geq 64µg/ml. 49 (62.5%) *Enterococcus* isolates were found to sodium hypochlorite MIC \geq 6250µg/ml and 66 (83.5%) isolates were found to povidine iodine MIC \geq 12500mg/l. In general, high biocide resistance in enterococci, especially in food samples, is a serious concern. The use of biocides during food processing (like for example for cleaning of food processing and transportation facilities) should be controlled in order to avoid selective pressure for biocide tolerant strains.

Keywords: *Enterococcus*, Food, Biocide, Resistant

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Food Dyes and Their Analysis Methods in Food Industry

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ABSTRACT

Food dyes are one of the most common additives in foods products. Some of the dyes used such food additive are Carmoisine, Sunset Yellow, Ponceau 4R, Brown HT, Orange B, Allura Red and others. The synthetic dyes contain azo (-N=N-) functional groups on the aromatic ring structures; so they are harmful for human health. The dangers of food colorant include an increased risk of cancer and other diseases such as allergic reactions, anaphylactic shock, asthma, hormonal disorders and hyperactivity. The azo dyes offer strong vivid colors and are used for coloring of a variety of the food products such as ice cream, yoghurt, soft drinks, instant puddings, flavored chips, cake mixes, custard, candy, and fermented dairy products. In food industry, there is a necessity to control the composition of the synthetic azo dyes containing in food. For that purpose many analytical techniques are useful for the determination of azo dyes including spectrophotometry, thin layer chromatography (TLC), high performance liquid chromatography (HPLC), capillary electrophoresis (CE) and liquid chromatography-mass spectrometry (LC-MS). The aim and scope of the present work is to describe several analytical methods benefited for determination of azo dye ingredients in food.

Keywords: Food additives; Food dyes; Azo dyes; Analysis; TLC; HPLC; CE; LC-MS



Postharvest quality of *Tulipa agenensis* flowers and bulbs

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Abstract

Tulip (*Tulipa* L.) is one of the most popular flowers in the world. The genus *Tulipa* L. belongs to the family *Liliaceae* and is represented by 19 taxa (17 species), of which 4 are endemic in Turkey. Tulip is the most produced flower bulbs in the world as ornamental plants, pot plants or cut flowers. Tulip flower production are recently developing in Turkey. *Tulipa agenensis* is flowering in April and May, naturally grown in the altitudes of 500-1500 m around the provinces of Amasya, Ankara, Çanakkale, İzmir, İçel Adana and Hatay in Turkey. We collected the native tulip bulbs from 5 different populations in various provinces. The bulbs were cultivated in the field of Black Sea Agricultural Research Institute in Samsun. Cut flowers were harvested at bud stages. Postharvest life of tulip flowers were determined at 20 °C in standard conditions. The average vase life of *T. agenensis* flowers was 6 days. In addition, the weight, size (diameter and length) and shape index of bulbs and the number of bulblets were investigated in *Tulipa agenensis* after harvest. Bulb shape index changed between 0.43 and 0.66 among the populations.

Keywords: Tulip, *Tulipa agenensis*, Cut flowers, Vase life, Bulb morphology, Bulblets



Investigation of Antimicrobial Resistance of *Salmonella* spp. from Chicken Meat and Ground Beef

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Abstract

Salmonella is one of the major foodborne pathogen that causes various diseases including typhoid fever, gastroenteritis, and bacteremia in humans and animals. Salmonellosis as an important foodborne infection is a major public health problem worldwide. Salmonellosis emerges through consumption of contaminated foods such as meat, poultry, milk, eggs, cheese, and vegetables. Recently, the occurrence of *Salmonella* in foods from different origins has increased rapidly. All over the world, the increasing antimicrobial resistance is a serious concern for public health. The overuse or misuse of antimicrobials in agriculture and human medicine has led to development of antibiotic resistance, especially multidrug resistance in *Salmonella*. In this study, *Salmonella* spp. isolates from chicken meat and ground beef were examined for antimicrobial resistance. The 22 *Salmonella* isolates were tested for resistance to 18 antimicrobial agents on Mueller Hinton Agar by disk agar diffusion method. Antimicrobial resistance testing of *Salmonella* isolates showed that the isolates were sensitive to amikacin, amoxicillin-clavulanic acid, ceftiofex, and ceftriaxone. All 22 (100%) *Salmonella* spp. had resistance to erythromycin. Eleven isolates (50%) were resistant to tetracycline. All isolates (100%) showed resistance to at least one antimicrobial. Of the isolates, 10 isolates (45.5%) were found to be resistant to one or two antimicrobial agents. Twelve of twenty-two isolates (54.5%) were multidrug resistant to three or more antimicrobial agents. The result of this study provides a valuable information on antimicrobial resistance of *Salmonella* spp. from chicken meat and ground beef. Antimicrobial resistant *Salmonella* isolates could be transmitted to humans via food chain and may constitute a risk for human health.

Keywords: *Salmonella* spp., Chicken meat, Ground beef, Antimicrobial resistance

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Determination of Antimicrobial Resistance of *Cronobacter* spp. Isolated from Foods

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Abstract

Cronobacter spp. as an important foodborne pathogen causes serious diseases including meningitis, sepsis, necrotizing enterocolitis in neonates, infants and also in elderly or immunocompromised people. *Cronobacter* spp. can frequently be isolated from a wide range of foods and food ingredients including meat, herbs, spices, salads, milk powders, infant foods, cereals, fruits, and vegetables. Antimicrobial resistance is increasing problem for public health in both developed and undeveloped countries. The abuse or misuse of antimicrobials has led to the development of antimicrobial resistance, including multidrug resistance. The treatment of infections is becoming more difficult due to emergence and spreading of antimicrobial resistant strains. In this study, the 35 *Cronobacter* isolates from various foods such as desserts, cheeses, doners, kavurmas, pastramis, meat free cig koftes, spices, and cereals were examined for antimicrobial susceptibility. All *Cronobacter* isolates were tested against 11 antimicrobial agents using the standart Kirby-Bauer disk diffusion method on Mueller Hinton agar. The results revealed that *Cronobacter* spp. had the highest resistance rate against cephalothin (94.3%) followed by ampicillin (88.6%). All isolates exhibited 100% susceptibility to gentamicin, ciprofloxacin, tetracycline, trimethoprim and trimethoprim-sulphamethoxazole. Intermediate resistance to chloramphenicol, amikacin, ampicillin, cephalothin, imipenem and amoxicillin-clavulanic acid was observed. All isolates were resistant to at least one antimicrobial and one isolate (2.6%) was resistant to three antimicrobial agents. This study represents a useful data on the antimicrobial resistance of *Cronobacter* spp. as an emerging oppurtunistic foodborne pathogen. The monitoring of antimicrobial resistance pattern of bacteria is essential for prevention and control of infections caused by antimicrobial resistant strains.

Keywords: *Cronobacter* spp., Antmicrobial Resistance, Food



Starch Based Sugar; Production, Properties, Usage and Health Effect

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Abstract

There are two types of sugar production as a sucrose based (sugar beet) and a starch based (starch based sugar, SBS). SBS have two fundamental group, which are glucose syrup and high fructose syrup (HFS). Corn is used as raw material in the production of SBS. Potato, rice and cassava also tried as raw material beside corn. The syrup is obtained from the hydrolysis of starch to glucose, maltose, maltotriose and dextrans. Enzymatic and acid hydrolyses have been used traditionally to modify native starches and to create glucose syrup. HFS is produced by the hydrolysis of starch into glucose followed by isomerization into fructose. Therefore, glucose syrup is an intermediate in HFS production. Three forms of HFS are commercially available: HFS-42, HFS-55 and HFS-90. Syrup is used in foods to soften texture, add volume, prevent crystallization of sugar and enhance flavor. Beside usage alone also SBS used with sugar beet for food products to enhance their own effect. There is a lot of argument on SBS negative health effect but there is no proved scientific study. In biochemistry view there is no difference between sugar content, calorie value of glucose syrup and fructose syrup. Metabolism of glucose and glucose syrup are same but in HFS the metabolic way is change. There is no regulation for the fructose by insulin so fructose metabolism rapid and uncontrollable in the body. And also fructose goes right to the liver and it can be triggers *lipogenesis* (the production of fats like triglycerides and cholesterol). As a result, the SBS is one of the important food intermediate product and can be used to enhance desirable properties of food. Safe and quality syrups can be obtained by food industry but there still needs more study for effects of SBS on human body.

Keywords: Starch based sugar, high fructose syrup



Influence of addition rosemary essential oil on oxidative stability of pistachio puree under accelerated conditions

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Abstract

In this study, the influence of adding rosemary essential oil on oxidative stability of pistachio puree was investigated. Pistachio puree is made by pasting roasted pistachio kernel and used as filling material or additive in pastry, cookery and confectionary. The main problem of pistachio puree that has high amount of oil content (50-60%) is lipid oxidation. There has been great interest in natural antioxidant because of health concerns surrounding synthetic antioxidants. Rosemary (*Rosmarinus officinalis* L.) has been widely accepted as one of the spices with the highest antioxidant activity due to its antioxidant properties of leaves. For this reason, rosemary essential oil (RO) was used to as natural antioxidant. 150, 300, 600 ppm of RO were added to pistachio puree and well mixed at ambient temperature. Butylated hydroxyanisole (BHA) and control samples were used for comparison. Oxidative Induction Time (OIT) was measured at three different temperatures, 110, 120, and 130°C by Rancimat which is one of Accelerated Shelf-Life Test (ASLT). Addition of RO showed increasing OIT as a result scavenging properties of RO. As the temperature increased OIT was significantly decreased. Based on these results, rosemary can be used as natural antioxidant to increase shelf life of pistachio puree. But RO should be deodorized or encapsulated before usage to prevent or mask its intense flavor.

Keywords: Pistachio puree, rosemary, lipid oxidation, Rancimat

The effect of mycorrhiza inoculation on growth of safflower (*Carthamus tinctorius* L.) for remediation of contaminated soils

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Abstract

Phytoremediation is the use of plants to remove pollutants from environment. Arbuscular mycorrhizal fungi increase the resistance of plants, plant metal tolerance and accumulation of heavy metals against heavy metal stress with settled in the roots of plants. Safflower have been reported to accumulate some heavy metal from soils. In this study, the effect of mycorrhizal inoculation to safflower plants (Balci and Dincer species) was examined to improve in the contaminated soil. The inoculation effect of *G. Mosseae*, *G. intraradices*, *G. deserticola*, *G. clarium*, *G. caledonium* and *G. etunicatum* mycorrhiza types were investigated on safflower (*Carthamus tinctorius* L.) in contaminated soil. The soil used in the experiment were taken from a depth of 0-30 cm from mercury waste mound (rich in mercury, lead, arsenic and cadmium) stocked on open field in Kursunlu-Konya province. The *different* type mycorrhiza spores used in the experiment were applied into the pots. The experiment was completed at the end of the 60-day vegetation period. This study carried out in greenhouse conditions, the total metal concentrations of experiment soil are 98 mg kg⁻¹ Pb, 108 mg kg⁻¹ Zn, 183 mg kg⁻¹ As, >100 mg kg⁻¹ Hg, 69 mg kg⁻¹ Ni. The result of the experiment, In the study, the parameters of plant length, biomass content were examined. In the study plant length, biomass content significantly increased with mycorrhiza inoculations compared to the control. As a result, the resistance mechanism of this plant has been improved by mycorrhizas and the plants have improved even though they do not accumulate heavy metals in this dirty soil environment.

Keywords: Heavy metal, mycorrhiza, safflower, phytoremediation, soil pollution.

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Biosynthesis of Higher Alcohols and Acetate Esters from Orange Peel Waste by *Kluyveromyces marxianus*

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Abstract

Kluyveromyces marxianus is non-pathogenic yeast which is accepted as industrial working horse for biotechnological process with a high specific growth rate and an ability to grow on wide variety of substrates. *K. marxianus* was reported to produce 'fruity' and 'rose-like' flavors by microbial fermentation. From this perspective, the aim of this study was to investigate the production possibility of higher alcohols and acetate esters as bioflavors from orange peel waste by *K. marxianus* fermentation. Fermentation of orange peel based media was conducted by using *K. marxianus* in shake flask and bioreactor conditions. Bioflavor compounds from orange peel waste were extracted by using solid phase microextraction (SPME) and identified by gas chromatography-olfactometry and gas chromatography-mass spectrometry. Sensory properties of control and fermented orange waste by *K. marxianus* were compared. The results showed that *K. marxianus* produced acetate esters including ethyl acetate, methyl acetate, phenyl ethyl acetate and phenyl ethyl alcohol. Concentration of ethyl acetate and phenyl ethyl alcohol were 1408 µg/kg and 90.61 µg/kg in shake culture condition, respectively. 'Etheric/orange', 'fermented fruit juice-like' and 'ripened fruit-like' were defined as characteristic flavour terms for fermented orange peel waste by *K. marxianus*.

Keywords: Orange peel waste, Bioflavor, Microbial Fermentation, Esters, Higher alcohols

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Mutation Breeding in Fruit

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Abstract

Mutation is defined as heritable changes that occur as a result of the changes in the inherited material. Recently, with the development of biotechnology, mutation has begun to be incorporated more into breeding programs. Because fruits are multiplied by vegetative propagation and therefore susceptible to mutation, they have been added to the mutation breeding program. Mutations in fruit play a role especially in seedlessness and color change. In addition to the well-known fact that citrus and grape fruits are prone to natural mutation, artificial mutations are also used for the development of new varieties. In this review, information will be given about the studies on mutation breeding in fruit.

Keywords: Mutation breeding, fruit



A morphometrical study from three-dimensional reconstruction of femur in red fox (*Vulpes vulpes*)

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Abstract

The aim of this study is to get three- dimensional (3D) reconstruction model from multidetector computerized tomography (MDCT) images of femur in the red fox. For this purpose, ten adult red foxes (6 males, 4 females) obtained from traffic accidents at different times were used in this study. MDCT images of animals were taken and 3D reconstruction was obtained via three dimensional modelling program (Mimics 13.1) after transferring the data to personal computer as DICOM format. Biometric measurements were taken from the 3D model of the femur. Some morphometric aspects were recorded for both sexes. Moreover left and right side of the biometric values of the femur were almost near. It was considered that this study contribute to anatomical knowledge of wild animals and 3D reconstruction models could be used in anatomic and morphometric studies.

Keywords: Femur, Three-dimensional imaging, Morphometry, Carnivore

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Genomic Applications of Entomopathogens for Pest Control

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Abstract

Entomopathogens are broadly studied for their potential task as biological control agents against devastating pest populations which are well-known with their usage in environmentally-friendly way. However, there are some restrictions in the field applications. To get understand the mechanisms of these useful agents and to take advantage of their complete potential for wide-range implementation in agriculture, some improvements are required. First of all, selection of new potential target genes is crucial to apply novel techniques. Several genomic applications have been used to determine and create different potential of entomopathogens in the pest management systems. Genome sequencing, transcriptome analysis, genetic engineering, RNA interference, CRISPR (clustered regularly interspaced short palindromic repeats) technologies have been applied to perform functional genomic studies in recent years which can be useful to increase the usage of the entomopathogens and can help to promote the effect of entomopathogens through available genomic sequence and putative protein data. On the other hand, this technologies might allow to create new pathogens for various insect species and prevent the potential of the resistance on insect host.

Keywords: Entomopathogens, genomics, pest control

Determination of The Effect of Different Types and Quantities of Selenium Applied To Dwarf Bean Plant

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Abstract

The primary cause of selenium deficiency in the human body can be attributed to the lack of Se content found in the foods we consume (Gupta and Gupta, 2000; Adams et al., 2002; Lyons et al., 2003; Arthur, 2003). Despite the fact that selenium is not necessary for plants, increasing the Se content in plants is nevertheless one of the main objectives in food production due to its important functions in terms of human health (Whanger, 2004; Thomson, 2004). Owing to the concentration of Se in cultivated grains today is very low, the enrichment of Se by fertilization (i.e. agronomic biofortification) or crop breeding (i.e. genetic biofortification) is described as the most effective strategies for increasing the concentration of Se (Lyons et al., 2003; Lyons et al., 2004b). This study was carried out to investigate the effects of selenium applications on dwarf bean plant when applied to the soil (0, 0.05, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5 and 5.0 mg Se kg⁻¹), to the leaves (0, 10, 20, 30, 40 ve 50 g Se ha⁻¹) and to the seeds (0, 0.5, 1.0, 2.0, 4.0 and 8.0 mM Se) under greenhouse conditions. Results showed with increasing selenium applications to the soil, seed selenium concentration increased from 0.11 mg kg⁻¹ to 118.42 mg kg⁻¹, whereas in leaf application concentration increased from 0.13 mg kg⁻¹ to 3.63 mg kg⁻¹, and in seed application it increased from 0.12 mg kg⁻¹ to 6.39 mg kg⁻¹. With respect to seed selenium concentration, some researchers have found that soil application of 0.05 mg kg⁻¹, leaf application of 50 g/ha and seed application of 1 mM has caused desired selenium accumulation, ranging between 100-1000 µg Se kg⁻¹ (Allaway, 1968; Adams et al., 2002; Broadley et al., 2007).

Keywords: Selenium, dwarf bean, biofortification.



The New Technology Usage at Turkish Dairy Farms to Better Reproductive Performances

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Abstract

If meat and milk production are to be increased in our country, cow productivity, i.e. the number of calves produced per lifetime or per unit land area, must be improved and increased and the time from birth to slaughter must be reduced. The number of animals available for finishing is also critical. Many farm have tol ive eith these loses. Although varying among herds, annual average herd incidences of reproductive disorders and reproductive performance were similar to those reported. Managerial practices influenced incidences of retained placenta and uterine infection, days open of cows not bred and of all cows, services per conception, and percentages of herd open more than 100 days and culled for low production. Good heat detection programs can have a major impact on overall herd reproductive performance. The best heat detection programs start with careful timing, good observation and the effective use of detection aids. Being able to distinguish and interpret cow behaviour and other signs is critical – so are good record keeping and training for the people responsible for heat detection. Generaly farmers farmers with the best heat detection results use a combination of observation and heat detection aids. Several options are available to aid heat detection and increase heat detection rates. Although a rich variety of methods has been introduced for the detection of oestrus, a more accurate and practical method is still required.

Keywords: New Technology, Turkish Dairy Farms, Reproductive performances

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Growth Performance and Survival Rate Traits in Southern Anatolian Red Calves

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Abstract

This study was evaluate body weights and survival rates at birth, 3. and 6 months of age and to determine effects of calving year, season and sex on those traits in Southern Anatolian Red calves raised in Adana East Mediterranean Agricultural Research Institute Doğankent Farm between 2000 and 2007 years. Body weights of calves at birth, 3. and 6 months of age were 23.50; 68.30 and 112.76 kg respectively. The effects of calving year, season and sex were not significant on birth weight ($P>0.05$); Calving year and season on 3 months age weight were significant ($P<0.05$). The effects of calving year was significant on 6 months of weighth of calves ($P<0.05$) but season and sex was not significant ($P>0.05$). It was found that survival rates of calves at 3 and 6 months of age were 99.63% and 99.25%.

Keywords: Calf, Southern Anatolian Red, Performance, Survival rate

Recent Perspectives on 3-MCPD and 1,3-DCP Levels in Various Food Groups

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Abstract

Chloropropanols and their fatty acid esters are thermally processed food contaminants which have been increasingly attracting attention globally in recent years. The most common known isomers among the chloropropanols are 3-chloropropane-1,2-ol (3-MCPD), 2-monochloropropane-1,3-diol (2-MCPD), 2,3-dichloropropan-1-ol (2,3-DCP) and 1,3-dichloropropan-2-ol (1,3-DCP). Although it was reported that especially soy sauce, acid hydrolysed vegetable proteins (acid HVP) are an important resource for 3-MCPD and 1,3-DCP, other chloropropanol isomers might also be detectable in various foods at lower concentrations. 3-MCPD and 1,3-DCP have been announced to be a carcinogen (Group 2B) in vitro animal studies and 3-MCPD was classified as a potential genotoxic carcinogen by European Commission's Scientific Committee on Food (SCF). The tolerable daily intake (TDI) of 3-MCPD for humans was proposed at 2 µg/kg body weight per day over the whole life by the EC Scientific Committee on Food (SCF) and JECFA. 3-MCPD and 1,3-DCP are appeared in foods containing lipid and salt which is exposed to high temperature during their production. It was reported that its stability was affected by the pH, time and temperature of the heat treatment and the higher pH and temperature values and longer processing time were accelerated the rate of degradation of 3-MCPD. 3-MCPD and 1,3-DCP esters have been identified in all refined edible fats, oils and margarines, frying oils, infant formula and biscuits, jarred food, meat products as pickled herring, sausage, ham, salami, stir-fried pork and beef, marinated duck/goose, thermally processed food as french fries, potato crisps, roasted coffee, chicken grilled, roasted malt, sea products as crab, salmon fillet and cereal products as noodle, biscuits, toasted bread, breakfast cereals, doughnuts, hamburger, salty crackers. In this document the focus will be on the risk assessments of 3-MCPD and 1,3-DCP levels in different food matrices and products.

Keywords: Chloropropanols · 3-MCPD · 1,3-DCP · cereal · bakery products

Investigation of Antioxidant and Antimicrobial Activity of Pomegranate Peel

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Abstract

Pomegranate (*Punica granatum*), member of the *Punicaceae* family, is an exotic fruit with some mystical properties. It has been known since ancient times and widely consumed by many cultures for thousands of years. In recent years; significant progress has been made in the identification of pharmacological effects mechanisms of pomegranate as well as its peel. The aim of this study is to deal with the extraction of bioactive materials from pomegranate peel at different temperatures, ethanol concentrations. The effectiveness of extraction conditions were evaluated in terms of the production of total phenolic and flavonoid compounds and investigate their antioxidant and antimicrobial activity. The optimal temperature, ethanol concentration and extraction time were determined to maximize total phenolic and flavonoid content. The results showed that pomegranate peel could be used for the production of phenolic and flavonoid compounds with high antioxidant and antimicrobial activity and these strong bioactive agents could be used in food, cosmetic and pharmaceutical industry.

Keywords; Pomegranate Peel, Phenolic compound, Antioxidant, Antimicrobial



Identification of Plant-Associated Microorganisms Employing MALDI-TOF Mass Spectrometry as a Rapid Detection Technique

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Abstract

Detection and qualification of a wide range of pathogenic and non-pathogenic microorganisms enable to develop diagnostics and disease-management strategies. Especially the precise identification of plant pathogens is fundamental to plant pathogen diagnostics and plant disease management. Nowadays, matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry (MS) has been adopted as a successful analytical technique for identification of plant associated fungal, bacterial, yeast and nematodes on the basis of species-specific profiling, providing a rapid, easy-to-use and accurate alternative to current identification techniques in a microbiological studies. MALDI-TOF MS-based microbial identification offers the possibility of accurate, rapid, inexpensive identification of fungi, bacteria, yeasts and other microorganisms (such as nematode). The procedures of microorganism analysis by MALDI-TOF MS are technically simple and rapid. Moreover, reproducible and commercial databases are available for the identification of a wide spectrum of important microorganisms. MALDI-TOF MS analyzes specific peptides or proteins directly from intact bacteria, fungi and yeast. A variety of sample preparation methods are available. Bacterial colonies are collected directly from agar culture plates, mixed with matrix and dried on target plates. The dried preparations are exposed to laser pulses. Fungi are concentrated from broth cultures and treated with ethanol extraction. These methods are practical for identification of pathogenic and non-pathogenic microorganisms (such as biocontrol agents, saprophytes and probiotics). Thus, MALDI-TOF MS enables identification of plant-associated microorganisms and implementation of control measures before disease spreads. Recent use of MALDI-TOF MS as a rapid detection technique for a variety of microorganisms in plant pathology is discussed in this presentation.

Keywords: Identification, MALDI-TOF MS, plant-associated microorganisms, plant pathology.



Isolation, Identification and *in vitro* Screening Antagonistic Potentials of Endophytic and of Epiphytic Bacterial Isolates from Cotton Plants against *Sclerotinia sclerotiorum*

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Abstract

White mold caused by *Sclerotinia sclerotiorum* is one of the important soil borne fungal diseases that occurs in seedling stage of irrigated cotton. The use of fungicides for this disease is the most common practice but the application of fungicides is costly and causes environmental hazards. Therefore, it is necessary to develop promising alternative methods for controlling this disease. Recent studies have indicated that endophytic and epiphytic bacteria constitute a good alternative to protect plants against soil borne fungal diseases. The aim of this investigation was evaluation and comparison of endophytic and epiphytic bacterial isolates obtained from healthy cotton plants collected from different districts of Hatay province for suppression mycelial growth of *S. sclerotiorum*, fungal disease agent of cotton seedling. The antagonistic potentials of bacterial isolates were assessed by using dual culturing technique. Eleven endophytic and epiphytic bacterial isolates were identified using morphological and MALDI-TOF analyses. Five isolates (*Bacillus simplex* End1/3, Ex7/7, *B. endophyticus* Ex5/2, *B. megaterium* Ex9/2 and *Arthrobacter oxydans* Ex5/3) significantly suppressed fungal mycelial growth (percent inhibition ranging from 77.22% to 85.55%). The bacterial isolate *B. simplex* Ex7/7 was the most effective to inhibit the mycelial growth of the fungal isolate. There was a significant difference in antagonistic activities between the endophytic and epiphytic bacterial isolates taken from the same plant. Except for *B. simplex* End1/3, all endophytic bacterial isolates were inefficient in dual culturing technique. The epiphytic bacterial isolates exhibited significant inhibitory activities by reducing production of sclerotia in dual cultured petri plates. Effect of endophytic and epiphytic bacterial isolates on hyphal morphology were also determined using the Nomarski DCI-assisted light microscopy. Epiphytic isolate *B. megaterium* Ex9/2 caused considerably changes in hyphal morphology. These results indicate that the epiphytic bacterial isolates should be considered as biological control agent to control cotton seedling disease caused by *S. sclerotiorum*.

Keywords: Endophytic and of Epiphytic bacteria, biological control, *Sclerotinia sclerotiorum*, cotton.



Changes in Anthocyanins of Red Grape Juice During Juice Processing

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Abstract

Anthocyanins are water-soluble vacuolar pigments that may appear red, purple, or blue color and occur in all tissues of higher plants, including leaves, stems, roots, flowers, and fruits. The aim of this study was to determine the variability of anthocyanin content in grape juice during grape juice concentrate processing and contribute to the improvement of technological applications. HPLC method defined by Drust and Wrolstad (2001) was modified and applied for anthocyanin profile analysis. When the reduction of anthocyanin fraction from mash to concentrate was evaluated, the amount of Mv-3-glu was reduced about 82%, the amount of Cy-3-glu was reduced about %70 and the amount of Pn-3-glu was reduced about %52. In terms of reduction of anthocyanin fraction content, the critical process steps are enzymation for Cy-3-glu, enzymation and evaporation for Pn-3-glu and enzymation, pressing and filtration for Mv -3-glu. As a result, it was seen that the amount of anthocyanin fractions were reduced from mash to concentrate at all process. But, the enzymation was accepted as the most critical process in terms of the loss of anthocyanins because of the heat treatment for this process. The initial (mash) amount of anthocyanin maintained throughout the process is very important for the quality. Therefore, during the concentration of grape juice, enzymation process should be paid more attention in order to maintain the anthocyanin amount.

Keywords: red grape juice, anthocyanin, processing



Determination of Rheological Properties of Biscuit Grade Flour Blended with Different Flours

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Abstract

In recent years, the demand on healthy food, functional food, diet food, etc. and have been increased in all over the world. The aim of this study is to increase the functionality of biscuit by using different type of flours that have more fiber, phenolic than wheat flour. Therefore, wheat flour were blended with three different flours, namely chickpea, oat and barley flours at four different levels (10, 20, 30, 50%) and rheological properties of them were assessed by Mixolab® (Chopin) device. The water absorption capacity, development time, stability, amylase activity and retro-gradation degree of them were determined. Depending on the blend level, water absorption value were between %58.9-66.8, stability were between 5.33-11.32 minute, protein quality were 0.33-0.58 Nm, starch gelatinization were 1.22-2.13 Nm, amylase activity were between 1.55-1.83 Nm and retrogradation were between 2.05-2.81 Nm were determined from the mixolab curves. As a result biscuit flour blended with 30% of barley flour and 20% of oat flour were determined to be the most suitable blends for the production of biscuit.

Keywords: Chickpea flour, Functional food, Rheology



Alternative Source of Protein and Oil: Sour Cherry Kernel

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Abstract

The world population is rapidly increase so this raises reveals the problem of insufficient food. The humankind turned to look for alternative sources for solving these problems. For this purpose, nowadays the resulting waste and residues evaluation of increases its popularity in the different branches of industry occurring. Since the early fifties intense efforts have been made to explore new alternate protein sources as food supplements, primarily in anticipation of a repeatedly predicted insufficient future protein supply. For these, i.e. yeasts, fungi, bacteria and micro-algae. This scope protein products are derived from soy, nuts, peanuts, etc.. The sour cherry, is a species of *Prunus* in the subgenus *Cerasus* (cherries), native to much of Europe and southwest Asia. Sour cherries are excellent for cooking and are used mainly in pies, jams, juices and pastry products. This product is considered to be industrial, the kernel waste is released in significant quantities. Sour cherry fruit 6.3% consists of the kernel. And the kernel 26.6% consist of the part of the kernel. Sour cherry kernel are included of 32.21% protein, 18.1% carbohydrate, 34.75% fat, 60.0% fiber, 1.2% mineral substance. Oil production will be provided in sour cherry kernel and The oil extracted from kernel will be used in the food industry, cosmetics industry, detergent industry, machine oil production. Proteins, is expected to be used in a very wide application, such as the development of new food products, diet foods, baby foods, non-allergic, sports drinks, sausages, bread, cakes, salad dressings, sausages, soups, candies, a frozen dessert. In this study, high protein (32.21%) and oil content (34.75%) with a sour cherry kernel and can be used in human nutrition and other areas aimed to evaluate as a source of protein and fat

Keywords: Alternate Protein Sources, New Food, Kernel



Prevalence of Major Fungal Diseases of Alfalfa (*Medicago sativa* L.) Plants Growing in Hatay Province of Turkey

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Abstract

In this study, regular field surveys were conducted to determine the prevalence and incidence of soil-borne and foliar fungal diseases affecting alfalfa (*Medicago sativa* L.) plants in Hatay province of Turkey. Diseased samples were collected during the 2015 to 2016 growing seasons and causal agents of the major soil-borne and foliar fungal disease agents were identified. The most frequently encountered foliar and soil-borne fungal disease agents were *Phoma medicaginis* (summer black stem and leaf spot disease agent) and *Rhizoctonia solani* (*Rhizoctonia* root rot disease agent) respectively. *P. medicaginis* was observed in 65.8% of the fields surveyed, with a mean incidence of 35.7%. *R. solani* was observed in 57.5% of the fields surveyed, with a mean incidence of 28.5%. Foliar fungal disease agents such as *Stemphylium botryosum* (*Stemphylium* leaf spot), *Uromyces striatus* (rust), *Erysiphe trifolii* and *Leveillula taurica* (powdery mildew) and soil-borne fungal disease agents such as *Fusarium* spp. (*F. acuminatum*, *F. oxysporum* and *F. solani*), *Sclerotinia sclerotiorum* (*Sclerotinia* crown and stem rot), *Macrophomina phaseolina* (charcoal rot) and *Pythium* spp. (damping-off) were also recorded with the minor importance during the survey. In some of surveyed fields, both foliar and soil-borne fungal pathogens caused significant losses in herbage and seed yields and regeneration capacity. This survey information on the occurrence and severity of fungal diseases affecting alfalfa plants will help to prioritize future research needs and breeding programs for alfalfa.

Keywords: Alfalfa, *Medicago sativa*, fungal disease, prevalence, Hatay.

Determination Of *In Vitro* Antagonistic Potentials Of Endophytic Bacterial Isolates Against Anthracnose Disease Agent *Colletotrichum Gloeosporioides* On Lemon (*Citrus Limon* L.) Trees

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Abstract

Lemon is a fruit in the Eastern Mediterranean region of Turkey with socio-economic importance. However, lemon production has been increasingly affected by fungal disease anthracnose, caused by the *Colletotrichum gloeosporioides*. The aim of the present study was to isolate beneficial bacterial endophytes from the different parts of healthy plants obtained from the region where this disease is not a problem for lemon plantations. Fifty-four bacterial isolates were isolated and investigated for their ability to suppress mycelial growth of the disease agent *C. gloeosporioides* in vitro conditions. From this test, approximately 37% of isolates (20 bacterial isolates) showed different level of antagonistic activity. The *Bacillus* genus was the most frequently observed, followed by *Pseudomonas*, *Paenibacillus*, *Microbacterium*, *Serratia* and *Stenotrophomonas*. Ten different bacterial isolate belonging to *Bacillus subtilis*, *Bacillus amyloliquefaciens*, *Bacillus amyloliquefaciens*, *Serratia marcescens*, *Stenotrophomonas maltophilia* and *Sphingomonas yanoikuyae* species were found to be the most efficient isolates which inhibited the mycelial growth of *C. gloeosporioides* significantly (>%50.0 inhibition) in dual test experiments. *Bacillus subtilis* EAB-17 isolate was found as the most efficient bacterial isolate which inhibited the mycelial growth of *C. gloeosporioides* significantly (>%75.0 inhibition) in dual test experiments. Light microscopical observation on fungal pathogen hyphae in dual culture Petri plates revealed considerable morphological alterations in fungal hyphae, such as granulation of the cytoplasmic contents and lysis of hyphae. According to preliminary results of the significant reduction in the mycelial growth caused by antagonist bacteria, endophytic bacteria could be used as possible biocontrol agent against fungal disease agent.

Keywords: Biological control, *Colletotrichum gloeosporioides*, endophytes, lemon.



The Efficacy Of Fungicides Against *Coniella Granati* Causing Fruit Rot On Pomegranate In The Mediterranean Region Of Turkey

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Abstract

One of the objectives of the study was to identify the fungus involved in fruit rot on pomegranates in the Mediterranean Region of Turkey. The fungus designated as *Coniella granati* (Saccardo) Petrak & Sydow based on morphological characteristics. The fungus colonized the fruit after 5 to 8 days, followed by the appearance of fruit rot symptoms leading to the formation of abundant pycnidia covering the peel. Secondly, the efficacy of fungicides against *C. granati* was evaluated by mycelial growth and conidial germination assays. Tebuconazole, boscalid+pyraclostrobin and iprodione at 1.0, 25, and 50 µgml⁻¹ concentrations, respectively, completely inhibited mycelial growth. In the dodine, relatively higher concentrations required to inhibit mycelial growth. Tebuconazole exhibited the greatest inhibition (82.2%) of mycelium growth. The EC₅₀ values in mycelial growth of *C. granati* ranged from 0.13 to 151.9. The highest EC₅₀ values occurred for tebuconazole (0.13 µgml⁻¹). Tebuconazole, boscalid+pyraclostrobin and iprodione at 200, 10 and 5 µgml⁻¹ concentrations, respectively, were the highly effective in inhibiting conidial germination. The EC₅₀ values on conidial germination of *C. granati* ranged from 0.2 to 28.7. Tebuconazole had the lowest EC₅₀ value, while boscalid+pyraclostrobin exhibited the highest EC₅₀ value.

Keywords: *Coniella granati*, *Coniella* fruit rot, pathogenicity, fungicides, efficacy.

Applications of Electric Field and Natamycin Combinations on *Saccharomyces cerevisiae* Spoilage in Fresh Orange Juice

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Abstract

Citrus juices are acidic beverages (ca. pH 3 to 5) with high sugar content. Yeasts can tolerate high osmotic and low-pH conditions and grow at refrigeration temperatures and so they can cause spoilage in citrus juice. This spoilage must be prevented without loss of color and nutrients. Although thermal treatment prevents the growth of microorganisms, it causes the loss of nutrients and color in the final product. Therefore nonthermal treatment such as electric field, ultrasound and high hydrostatic pressure processing and natural chemicals can be used for this purpose. In this study, combination of pulsed electric field and natamycin application effects on *Saccharomyces cerevisiae* spoilage and quality characteristics of orange juice has been examined. *S. cerevisiae* was first incubated (approximately 7.14 kob/ml) in freshly squeezed orange juice. 1800 to 2500 volts electric field intensity (13µs-50hz wave frequency) was applied intermittently (1 pulse per minute) for 5,10 and 15 minutes in the inoculated orange juice. The application of 2500 volts-15 minutes provided approximately a 2.5 log reduction in the number of *S.cerevisiae*. Natamycin was added to the inoculated orange juice at different concentrations (6, 12 , 25 ve 50 mg/L) after the electric field applied(2500 volts-15 min). Treated and untreated orange juice samples were stored for 15 days under refrigerator conditions. The application of 2500 volts-15 min and 25 ppm natamycin at the end of storage resulted in a total of 5.1 log reduction in the number of *S. cerevisiae* (p<0.05). Also the quality parameters of all samples such as pH, color, phenolic compound, ascorbic acid, antioxidant and hydroxymethylfulfural were compared. A small difference was observed in the content of ascorbic acid, color and phenolic substance, while no significant difference was observed in the pH, brix, antioxidant and HMF values of the treated and untreated samples.

Keywords: Natamycin, Electric Field, *S. cerevisiae*

The Effect of Climate Change on Productivity in Lemon Production in some Provinces in the Mediterranean and Aegean Regions

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Abstract

Lemon is an economically important subtropical fruit type being grown in Mediterranean and Aegean Regions where climate conditions are suitable. The most important climate factor for lemon is temperature. The leading factor limiting the spreading area of lemon production is low temperature. Therefore, any temperature below 0 °C is damaging for lemon. The second most important climate factor is wind. Wind, both through its force (breaking tress, spilling fruits), and its effects on temperature and air humidity, is damaging for citrus. In addition to this, precipitation per square meter and monthly distribution precipitation are also highly important. This study has been conducted with the purpose of determining the effect of climate change on the productivity of lemon production in four provinces (Adana, Mersin, Antalya, Muğla) selected from the Mediterranean and Aegean Regions. According to the Turkish Statistical Institute 2016 data, lemon production was 850.600 tons. Of this production, 69.08% was in Mersin, 14.21% in Adana, 6.54% in Antalya and 6.19% was in Muğla. The climate data for the past 50 years from the four stations; went through homogeneity test, Welch and Brown-Forsythe tests, Tamhane test before conducting Pearson correlation analysis and Linear Trend Analysis and inclination graphics have been drawn. According to the performed analyses, the inclination in annual average temperatures is increasing and the highest amount of precipitation was in Mersin. The highest increase in average maximum temperature was in Muğla by 1 °C, and in Mersin by 1.5 °C. Increase in other provinces were observed to be lower than 1°C. The analysis of annual total precipitation indicated a mild increase in Antalya, decrease in Muğla and Adana, and there was a stable condition in Mersin. During the insolation hour, there was a slight increase in Mersin, while during minimum humidity there were significant increases in Muğla and significant reductions in the other 3 stations. When analysing climate data, the increase particularly in minimum temperatures and annual average temperatures was in positive direction with a strong linear correlation, and during winter months, temperatures inclined to rise. In soil temperatures at 20 cm there was a significant increase but the increase at 100 cm were non-significant. In conclusion, we believe that the lemon breeders and producers need to review their breeding and production techniques by considering these climate changes.

Keywords: Lemon, Mediterranean, Aegean, Climate, Temperatur



Determination of Cicadellidae and Cixiidae (Hemiptera) Pest Species of Potatoes in Hatay Province of Turkey

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Abstract

Potato is grown in tropical and subtropical regions of the world. Potato plant is cultivated as early season crop in Hatay province of Turkey. The current study was conducted to determine the Cicadellidae and Cixiidae pest species in the potato production areas in Hatay province of Turkey during 2011-2012 growing seasons. Insect sampling were carried out by use of yellow sticky traps and an insect aspirator (D-VAC). As a result of this study, twelve different species and one genera belonging to the three subfamilies, namely *Agallia sinuata*, *Anaceratagallia ribauti* (Ossianni-Isson, 1938) species belonging to subfamily Agalliinae; *Cicadulina bipunctella*, *Cicadulina* sp., *Circulifer haematoceps* (Mulsant & Rey), *Euscelidius mundus* (Haupt, 1927), *Euscelis incisus*, *Macrosteles quadripunctulatus* (Kirschbaum, 1868), *Psammotettix provincialis* (Ribaut, 1925) species belonging to subfamily Deltocephalinae; *Asymmetrasca decedens* (Paoli, 1932), *Empoasca decipiens* (Paoli, 1930), *Zygina karatasa* Dlabola, *Zyginidia sohrab* Zachvatkin species belonging to subfamily Typhlocybinae of Cicadellidae family have been identified. In addition to the above mentioned species, *Hyalesthes obsoletus* Signoret belonging to family Cixiidae were also determined in the sampled areas. *Empoasca decipiens* + *Asymmetrasca decedens* and *Psammotettix provincialis* were the most abundant Cicadellidae species in the sampled areas. *H. obsoletus* which is an important vector of virus and virus-like diseases were determined to be spread in the whole sampled area.

Keywords: Potato, Cicadellidae, Cixiidae, Hatay, Turkey.



In Vitro Propagation of Some *Prunus Mahaleb* L. Genotypes

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Abstract

The aim of this research was to facilitate propagation of some Turkish mahaleb genotypes by in vitro techniques. Shoot tips of annual shoots were used as explants. Murashige Skoog (MS) medium was used as base nutrient with 30 g L⁻¹ sucrose, and 7 g L⁻¹ agar. pH was adjusted to 5,6. The explants were exposed to 16 h light and 8 h dark period at 24 ± 1°C, temperature in growth chamber. The explants were subcultured every 30 days and shoot length, number of leaves and multiplication ratio were observed every 20 days. In multiplication stages, ten different mediums were tested. The optimum multiplication medium was obtained when used MS media supplemented with 4,4 µM BAP+0,49 µM IBA+0, 29 µM GA₃. Shoots rooted in MS medium supplemented with 0,3 mg L⁻¹ NAA.

Keywords: Mahleb, tissue culture, propagation, plant growth regulator

Effects of Some Insecticide on Eggs Of Tomato Leaf Miner, *Tuta Absoluta* (Meyrick) (Lepidoptera:Gelechiidae)

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Abstract

This study was conducted to determine the toxic effects on the eggs of *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) using recommended dose of three different insecticides, Spinosad, Indoxacarb and Chlorantraniliprole + Abamectin. Tomato leaves with 2 day old eggs were exposed to recommended dose of insecticides using leaf-dip assay method for 5 second. TritonX-100+water was used as control. The tomato leaves with egg exposed to insecticides put on %1.5 agar. Then they were kept 26±2°C, 60±10% RH and 16L:8D fotoperiod in growht room. Live-dead eggs were counted under stereo microscope after 5 days exposure. As a result, 100% mortality was observed in the eggs exposed to the recommended dose of insecticides.

Keywords: *Tuta absoluta*, spinosad, indoxacarb, chlorantraniliprole+abamectin,



Properties of Tomato Peroxidase

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Abstract

The activity and kinetics of tomato peroxidase were determined by using guaiacol and o-dianisidine as hydrogen donors. Activity of enzyme for inactivation experiments was determined by using o-dianisidine as hydrogen donor. Highest activity for guaiacol was observed at 0.1% (v/v) hydrogen peroxide and highest activity for o-dianisidine was observed at 0.05% (w/v) o-dianisidine and 0.1% (v/v) hydrogen peroxide concentration. According to kinetic results, V_{max} and K_m values for guaiacol were found as 0.52 abs/min and 0.66 mM, for o-dianisidine 1.14 abs/min and 0.16 mM respectively. Kinetics of POD catalyzed reaction followed Michaelis-Menten model and low K_m value was found by using o-dianisidine. Lower K_m value of o-dianisidine indicates higher tendency of enzyme towards hydrogen peroxide.

Keywords: Tomato, peroxidase, kinetics, activity.



Formation of Biogenic Amines in Sausage

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Abstract

Sausage is made from beef and/or water buffalo and/or mutton meat. Beef fat and/or sheep tail fat is used in the production. The prepared batters are stuffed into air-dried bovine small intestines. Salt is the major additive in sucuk and added in levels of 2–2.5%. Nitrate or nitrite is used for antibacterial, color and antioxidant purposes. Also, sometimes nitrate and nitrite are used together in combination. Saccharose or glucose is the fermentation substrate that can be readily utilized by lactic acid bacteria. Spices used in the production of sausage are generally black and red pepper, cumin, allspice and garlic. Biogenic amines are basic organic molecules, generally resulting from the microbial decarboxylation of certain amino acids. Importance of biogenic amines can be explained by two reasons; firstly, the intake of foods containing high concentrations of biogenic amines cause a health hazard through the direct toxic effect of these compounds and their interaction with some medicaments. Secondly, they may have a role as indicators of quality and/or acceptability in some foods. Lactic acid bacteria and Gram-negative bacteria have ability to form biogenic amines. It is based on the presence on amino acid decarboxylase enzymes. Key microorganisms for the food fermentations and contaminating spoilage bacteria can contribute to biogenic amine formation in foods. Sausages contain suitable environment for production of biogenic amines (presence of free amino acids, presence of microorganisms with decarboxylase activities and conditions favorable for the growth of microorganisms). Fermentation of sausage processes generally increase the formation of biogenic amines. Fermented products contain large quantities of microorganisms, accompanied by proteolysis causes to high concentrations of free amino acids constituting the nutrient required by the bacteria and the substrate on which decarboxylase enzymes work.

Keywords: Sausage, biogenic amine, fermentation, decarboxylase enzymes.



Sucuk

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Abstract

Sucuk is a spicy, dry, fermented sausage which is popular in Turkey and can also be found in countries located in Balkans, Middle East and Caucasus. Sucuk was mentioned in the “Divan-ı Lügat-ı Türk” (Compendium of the languages of the Turks, originally written by Mahmud of Kashgar in 1072). Sucuk is produced in a large amount in Turkey and Middle East countries, either in a factory under the controlled conditions (temperature and % RH) or in butcher shops under non-controlled conditions. Sucuks are generally manufactured from mixture of lamb or beef with tail fat. Antimicrobials, antioxidants (nitrite/nitrate, ascorbic acid, a-tocopherol, and phosphates), starter culture mixture and spices or spice oils are used in the production of commercial sucuk. The sucuk dough is filled, fermented and ripened after stuffing into natural or artificial casing. The production of sucuk relies on traditional techniques, and processing is greatly affected by the habits of artisans, raw materials and regions. However, the quality and particularly the safety of such products are related with the microflora of the fermented product. It is difficult to obtain fermented sucuks of a standard and high quality, mostly due to variations in technological, hygienic and microbiologic conditions and processing technology.

Keywords: Sucuk, sausage, fermentation.

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Observed Changes in Annual And Seasonal Temperatures in Nevşehir (Central Anatolia, Turkey) For Period 1960-2016

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Abstract

In this study, changes and trends in mean annual and seasonal temperatures and temperature anomalies in Nevşehir were investigated for period 1960-2016. Nevşehir is located within Central Anatolia Region which is potentially sensitive to climate changes due to its semi-arid climate. Trends in temperature series were analyzed using Mann-Kendall and Gaussian statistic tests. Results of statistic tests show that there are statistically significant increases in mean annual and summer temperatures at 95% confidence interval. Statistically significant increasing trend in spring and autumn temperatures is weaker than summer temperatures. Namely, slight heating trend in these seasons is detected. For winter temperatures statistically significance is detected at the increasing trend for this period. The trends, both annual and summer season, are evident from 1994. On the other words, the mean annual temperatures are above long-term average from this year. The warmest year is year of 2010 and the coldest year is year of 1992 in Nevşehir.

Keywords: Climate change, trend, temperature, Mann-Kendall, Nevşehir

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Chronological Course And Effects Of Agricultural Support Policies in Turkey

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Abstract:

The objectives and policies for the agriculture sector have begun to be established gradually with the adoption of the planned period in Turkey by 1963. Various support policies among the main objectives of these policies has found an important place. Supporting policies that aimed accelerate the sector have undergone periodic changes in general policies parallel. These periods; It is possible to evaluate three main axes based on 1980, which is assumed to be liberalization in agriculture. In the pre-1980 period, "statist politics", between 1980 and 2000 "liberal politics" and after 2000, "effective policies that take into account the imbalance and lack of planning in the sector can be explained. Policy applications used in this period; As direct income support payments, area based agricultural supports, differential payment system, compensatory payments, livestock support, agricultural insurance payments, rural development support, supports program protection of farmland environmental purposes, other support payments and lastly the National Agricultural Project can be sorted. In study, as a sector affected by the general political atmosphere, medium and long-term sustainable and applicable policies will be analyzed by evaluating from the scientific perspective whether it comes to the desired level of planning and sustainable agricultural policies.

Keywords: Agricultural Policy, Agricultural Support Policy, Sector Effects.



Effects of Microwave Output Power and Sample Amount on Drying Kinetics of Melissa Officinalis

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Abstract

Drying is one of the oldest food preservation method for removal of water. The purpose of drying food products is to remove water from solids to a certain level at which microbial decadence is avoided. Drying allows longer periods of storage with minimized packaging requirements, reduces shipping weights and preserves seasonal plants and makes them available to consumers for a long time. Microwave drying is having advantage of high drying rates, high energy efficiency, better product quality and efficient space utilization compared with conventional drying methods [1,2]. Fresh and more often dried melissa (*Melissa officinalis* L.) leaves are commonly used for making tea due to the aromatic and the therapeutic properties of the essential oil. Moreover the processed leaves are used in herbal medicine and natural cosmetics [3]. In the present study, the effects of microwave output powers and sample amounts on moisture content and moisture ratio of melissa leaves were investigated. Domestic type of microwave oven used for drying experiments. Experiments showed that drying time is related with output power of microwave oven. With the data acquired, mathematical models developed and drying constants calculated for each sample.

Keywords: Microwave Drying, Purslane Leaves, Drying Kinetic



Effect of Different Tannery Sludge Compost Levels on The Yield and Some Agronomical Characteristics of Maize (*Zea Mays* L.)

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Abstract

Composted tannery sludge can be viewed as useful on farmland because of its obvious fertilizer effect due to the high levels of nitrogen. However, an excessive level of chrome application may cause accumulation in the soil as well in farm crops and possibly endanger human health through the food chain. Since heavy metals have a strong adsorption and fixing ability in soil, the question is; will a small quantity of chrome in the composted sludge be able to enter the food chain and consequently endanger human health? With this point of view, we investigated the potential of composted tannery sludge for maize crop and to examine the effects of different composts incorporated in soil at different concentrations on maize growth, yield and some agronomical properties. The study was conducted in Department of Field Crops, Faculty of Agriculture, Ege University, Izmir/Turkey. Eleven different soil:compost mixtures (on a percentage weight basis) were hand-made using: (i) 100:0, (ii) 90:10, (iii) 80:20, (iv) 70:30, (v) 60:40, (vi) 50:50, (vii) 40:60, (viii) 30:70, (ix) 20:80, (x) 10:90 and (xi) 0:100 ratios, respectively. For example, for a 50:50 mixture, 2 kg of soil and 2 kg of compost were weighed in a plastic pot and mixed to get a uniform distribution. Four pots each were prepared for different treatments, having total number of 44 pots. Some traits were tested in the experiments such as plant height, number of leaves, fresh and dry matter yields and root yield. Results clearly showed that tannery sludge compost amendment increased the different soil chemical parameters and nutrients contents in soil. Concentrations of Cu, Cd, Cr, Zn, Pb, Ni, Mo and Mn increased in soil due to composted tannery sludge amendment. Dry matter yield of maize increased with increasing compost rate from 0 to 20%, but decreased after this point due to most probable toxic effect of tannery sludge compost.

Keywords: tannery sludge compost, maize, fresh and dry matter yields.

Microbiological Properties of Strained (Süzme) and Burnt (Yanık) Yoghurts Consumed in Denizli

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Abstract

Yoghurt is one of the most produced and consumed dairy product in our country. Strained yoghurt is yoghurt that has been strained to remove its whey, resulting in a thicker consistency than unstrained yogurt, while preserving yoghurt's distinctive, sour taste. Outside of our country, strained yoghurt or concentrated yoghurt are produced especially in Middle East countries. Burned yoghurt is a kind of yoghurt produced locally in Denizli province. In the production of burned yoghurt, a scoop of milk is caramelised than whole milk is added and burned taste is ensured. The aim of our study is to determine the microbiological quality of these two different types of yoghurt that are locally produced in Denizli province. For this purpose, 5 strained and 5 burned yoghurt samples were purchased from Denizli district markets and supermarkets. In these samples, Lactic Acid Bacteria (Lactobacillus and Lactococcus), Total Aerobic Mesophilic Bacteria (TAMB) and Yeast-Mold counts were carried out. The average number of lactobacilli in strained yoghurt samples was 6.46 log cfu/g, the average number of lactococ was 6,99 log cfu/g, the average number of TAMB was 5,90 log cfu/g and the average number of yeast-mold was 5,04 log cfu/g. The average number of lactobacilli in burnt yoghurt samples was 6.27 log cfu/g, the average number of lactococ was 7,88 log cfu/g, the average number of TAMB was 5,91 log cfu/g and the average number of yeast-mold was 5,65 log cfu/g.

Keywords: Strained (Süzme) yoghurt, Burnt (Yanık) yoghurt, Microbiology, Denizli.

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Protective Role of Selenium in Fish

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Abstract

Selenium (Se) is an essential element, but it may caused to toxic. It is known that it is effected physiological stress in fish. In our study, this review is aimed to the protective mechanism effect of selenium in fish. For this purpose, the protective effect of selenium in fish has been and examined the toxicity of other metals. In this review, the effect of selenium in fish was investigated from toxic metal such as mercury to essential metal such as copper. This effect includes the accumulation and physiological responses of metals in fish.

Keywords: Selenium, fish, accumulation, toxic metals

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Onion Juice Pasteurization By Coiled-Type UV-C Reactor System

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Abstract

The objective of this study is to investigate the pasteurization of acidified onion (*Allium cepa* L.) juice by ultraviolet (UV-C) irradiation. UV-C irradiation is a non-thermal process which has relatively no negative effect on nutritional and sensorial quality of food products. Continuous pasteurization of onion juice was performed by a designed coiled-tube type UV-C reactor. System is composed of four vertical 20 W (UVP XX-20S, 254 nm) low-pressure mercury lamps coiled using a PTFE tube. A reflector and a cooling jacket were placed outside the coiled tube. A secondary eddy flow effect was achieved with a Dean number of 0.073. Onion juice was pumped through the tubing at flow rates of 1.26 to 2.06 L/min. The population of *Escherichia coli* K-12 strain (a surrogate of *E. coli* O157:H7) inoculated in onion juice was reduced by 4.83 (± 0.54) log after being exposed to UV-C light for 8.13 min at an estimated UV-C dosage of 5433.3 mJ/cm². The energy density was calculated as 3809 J/L. As a result of this UV-C treatment, the total color change (ΔE) of the onion juice was recorded as 1.15 (± 0.27) which can be referred as slightly noticeable. This study revealed that the designed coiled-type UV-C reactor was able to meet demand of consumers of fresh-like and pasteurized onion juice. This study provides some important findings which will form a basis for a further pilot-scale UV-C reactor design

Keywords: Onion juice, pasteurization, UV-C reactor

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Evaluation on Heat and Drought Tolerance Capacity of Chickpea

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Abstract

Chickpea (*Cicer arietinum* L.) is one of the important legumes widely grown for dietary proteins in semi-arid Mediterranean climatic conditions. To evaluate the genetic diversity with improved heat and drought tolerance capacity in chickpea, thirty-four selected chickpea genotypes were tested under different field-growing conditions (rain fed winter sowing, irrigated-late sowing and rain fed-late sowing) in 2015 growing season. A factorial experiment in randomized complete block design with 3 reps was conducted at the Eastern Mediterranean Research Institute Adana, Turkey. Based on grain yields under different growing conditions, several indices were calculated to identify economically higher-yielding chickpea genotypes with greater heat and drought tolerance capacity. Average across chickpea genotypes, the values of tolerance index, mean productivity, yield index, yield stability index, stress tolerance index, stress susceptibility index, and geometric mean productivity were ranged between 1.1 to 218, 38 to 202, 0.3 to 1.7, 0.2 to 1, 0.1 to 1.2, 0.02 to 1.4, and 36 to 170 for drought stress and 3 to 54, 23 to 118, 0.3 to 1.7, 0.4 to 0.9, 0.2 to 2, 0.2 to 2.3, and 23 to 118 for heat stress, respectively. There were highly significant differences observed among the tested chickpea genotypes response to drought and heat stresses. Among the chickpea genotypes, the Aksu, Arda, Çakır, F4 09 (X 05 TH 21-16189), FLIP 03-108 were identified with a higher drought and heat tolerance capacity. Based on our field studies, it is suggested that the drought and heat tolerance indicators of plants can be used by breeders to select stress-resistant economically productive chickpea genotypes suitable to grow under Mediterranean climatic conditions.

Keywords: Irrigation, Rain fed, Stress Susceptibility, Tolerance Indices



Effect of Different Sources and Levels of Zinc on Performance, Egg Quality and Serum Mineral Concentration in Laying Hens¹

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Abstract

This study was conducted to evaluate the efficiency of dietary zinc sources and levels on performance, egg quality, some tissues mineral content and bone characteristics in laying hens. Twenty-four weeks-old, 270 H&N Super Nick laying hens were allocated to 15 experimental groups in a 3 (zinc sources) x 5 (levels) factorial arrangement. Three zinc sources including zinc-oxide as inorganic forms, zinc-proteinate as organic form and nano zinc-oxide powder as nano form at different levels (20, 40, 60, 80 and 100 mg/kg diet) were tested. The results of study indicated that there were no differences in egg production feed intake, feed conversion ratio, egg weight, egg mass as a performance parameters among the treatment groups ($P > 0.05$). The eggshell ratio and eggshell breaking strength had no significantly affected by the dietary treatments, but eggshell thickness was significantly higher in the inorganic-ZnO group than that in the nano-Zn and organic-Zn groups ($P < 0.01$). Serum P content was significantly lower in the inorganic-ZnO group than that in the nano-Zn and organic-Zn groups ($P < 0.05$).

Keywords: Nano zinc, eggshell, mineral content, bone, laying hens.

¹ This study is summarized from Bedia UÇAR YILDIRIM's Master's thesis and it's funded by TÜBİTAK (Project number 115O938).

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Determination of Potential Pests of Lepidoptera Species on Commonly Grown Stone and Pome Fruits Trees in Hatay Province of Turkey

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Abstract

A stone and soft stone fruits have significant place in Turkish economy. In our country has a very favorable ecology for production of fruits so that a large number of different fruit varieties are grown in each of geographical region. However, there are many kinds of insect pests that restrict fruit production in our country and in the world. The purpose of this study was determine pests or potential pests of lepidopteran species on stone and pome fruits in Hatay province of Turkey. This study was conducted in stone and pome fruits orchards of Serinyol, Kırıkhan, Batıyazı, Dörtüol, Yayladağı and Samandağı districts and their villages in 2006-2007, the surveys were arranged at these orchards at regular intervals and sampling were done during the flowering, mature fruits and period of harvesting fruits. A visual control and shaking methods for the daytime and light traps for the adults during nighttime were used. In this study, 10 different lepidopteran species from six families were identified: *Cydia pomonella* (L.) (Tortricidae); *Zeuzera pyrina* (L.) (Cossidae); *Lymantria dispar* (L.), *Arctia villica* L., *Diaphora mendica* (Clerck, 1759) (Erebidae); *Cyclophora pupillaria* Hübner, [1799], *Ascotis selenaria* ([Denis&Schifferrmüller], 1775) (Geometridae); *Hyles euphorbia* Linnaeus, *H. pinastri* Linnaeus (Sphingidae) and *Palpita unionalis* Hübner (Pyralidae). *C. pomonella* in apple gardens, *Z. pyrina* and *L. dispar* in many stone fruit and pome fruits trees, and *A. lineatella* especially for apricot gardens caused significant damages in Hatay province.

Keywords: Stone fruits, pome fruits, Lepidoptera, pest, Hatay

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Determination of Watershed Land Use Type with Bayesian Network in Semi Arid Region

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Abstract

In recent years, experts are identified that climate change and global warming affects stream flow regime. These changes cause floods and erosion in creeks, streams, rivers etc. Especially in semi-arid watersheds, the structure of the land use type is an important factor in preventing possible disasters. The aim of this study is to determine watershed land use type by using hydro-morphological structure of stream and some physical water quality parameters. To do so, hydro-morphological observations and some physical water quality parameters are collected from 513 different sample points in Acicay watershed. Moreover, the most important 5 different factors that use to identify land use type are considered in this study. These factors are Rosgen stream type, salinity, sinuosity, channel material and stream slope respectively. Furthermore, these observations are analysed with Bayesian networks in order to predict the land use type. Four different scenarios are considered to see the changes in the type of the land use. Channel material is found to be an important parameter because it was effecting the land use in all scenarios. Also, Rosgen stream type was distinguishing parameter on predicting the agricultural land.

Keywords: Hydro-morphology, Watershed, Bayesian Network, Land Use Type, Semi Arid



**Population Dynamics of The *Trialeurodes Vaporariorum* (Westw.)
(Aleyrodidae, Hemiptera) on Broccoli Under Greenhouse Condition,
in Malatya, Turkey**

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Abstract

The emergence period and population changes of greenhouse whitefly (*Trialeurodes vaporariorum* [Westw.] (Hemiptera: Aleyrodidae) were studied in greenhouse grown plants in Malatya province in 2015-2016. Broccoli seedlings planted out on 1 October 2015. Whiteflies on leaves were counted weekly between October 2015- March 2016. Only adults of the greenhouse whitefly were seen, egg, larvae and pupae weren't seen on leaves in this period. Also three yellow sticky traps were using for monitoring greenhouse whitefly. First adults were seen on 23 October and 3 whitefly/10 leaves. Whitefly population were low level on last October (30 October; 9 whitefly/10 leaves) and first week on November (6 November; 21 whitefly/10 leaves). On second week of November, whitefly population began to increase (13 November; 35 whitefly/10 leaves). The most whitefly populations were seen 27 November (57 whitefly/10 leaves), 4 December (63 whitefly/10 leaves) and 26 February (63 whitefly/10 leaves). Broccoli harvested on 24 March 2016. Last counted made on 18 March and 17 whitefly/10 leaves.

Keywords: Whitefly, broccoli, greenhouse



Cork Stoppers and Alternative Wine Closures

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Abstract

Bottle closures have an important role on quality of wine during ageing in bottle. Cork stoppers that are made from the bark of the oak tree (*Quercus suber L.*) became the pre-eminent choice in wine bottling and are used worldwide for several centuries. Cork harvesting only takes place every nine to twelve years and the first harvest of usable quality is generally obtained from 40 to 50 years of old trees. The production of natural corks that includes many stages is notably hard, time consuming and expensive. Although natural cork is regarded as the norm for high quality wines, it causes an important problem for wine industry. The problem is 'cork taint', frequently associated with 2,4,6-trichloroanisole (TCA) that is migrating from corks during the storage of bottled wines. This compound leads to an unpleasant aroma characterized as earthy, musty and moldy which can be rejected by consumers even at very low concentrations. In recent years, the demand for alternative wine stoppers has increased associated with wine consumption and consumer awareness. In this review, characteristics of corks and alternative wine closures such as synthetic corks, screw caps, crown caps and glass stoppers are summarized and their effect on wine quality (volatile compounds, aromatic profile, sensory properties and phenolic compounds etc.) are discussed.

Keywords: Wine closure, cork taint, wine quality, oxidation

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Plant-Sourced Proteases Used in Cheese Making

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Abstract

Milk coagulation is the crucial stage in cheese making. Plant proteases have been used as milk coagulants for centuries as crude or purified form. Leaves, flowers, latex, stem and seeds of many plants have been reported as milk coagulant similar to rennin in different proteolytic activities. Almost all enzymes used as milk coagulants are belong to aspartic proteases, but enzymes from cysteine and serine proteases have also been reported as milk clotting enzymes under suitable conditions. Proteases from many different plant sources such as *Ficus carica*, *Cynara cardunculus*, *Albizia julibrissin*, *Carica papaya*, *Ricinus cummunis* and *Ananas sativa* have been studied and reported as potential milk coagulants. Traditionally plant milk coagulants such as *Calotropis procera* and *Cynara cardunculus* are used in manufacture of African wara cheese and cheese from Mediterranean ewe's milk, respectively. Ficin and papain are other commonly used milk clotting enzymes studied. Plant-sourced proteases seem more suitable for production of soft cheeses such as cream cheese because of their higher proteolytic activity.

Keywords: Cheese, milk coagulation, plant proteases, vegetable coagulants

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Effect of Different Sowing Methods on Yield and Yield Component in Wheat Cultivation

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Abstract

This research was carried out to determine the effects of conventional and two different bed planting methods in wheat cultivation under Cukurova conditions. Field trials was established in East Mediterranean Agricultural Research Institute/Haciali location trial fields between November 2014-June 2015. Trials was established according to Randomised Complete Block Design with 4 replications. Ceyhan-99 bread wheat variety was used as seed material. Flat Planting, Bed Planting (3 lines per bed), Broad Ridge Sowing (8 lines per ridge) was three planting methods tested in this research. As a result of the research, effects of applied different soil tillage and sowing methods was insignificant based on plant height (cm). Nevertheless, statistically significant differences at 0.01 level were observed between Harvest Index (%), Number of Spikes (number/m²), Biological Yield (kg/da), Stem Yield (kg/da) and Grain Yield (kg/da) values. As a result of the research, conventional sowing method was superior to other applications based on grain yields where Conventional method was 39.67% higher than Bed Planting Method and 17.84% higher than Broad Ridge Sowing method.

Keywords: Wheat cultivation, conservation tillage, bed planting, broad ridge sowing

Determination of The Nutritive Value of Some Bread Wheat Varieties Developed in East Mediterranean Agricultural Research Institute Using in Vitro Gas Production Technique

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Şadiye YAKTUBAY⁴, Mehmet Nazım DİNÇ

Abstract

This study was carried out to determine the feed value of different bread wheat varieties by chemical analysis and in vitro gas production technique and to compare feed values. The results of analysis of variance indicating that the level of significance differences in the contents of dry matter, ether extract, crude protein, Acid detergent fiber (ADF), Neutral detergent fiber (NDF), Hemisellulose (HEM) and Digestible organic matter (DOM) between several varieties of bread wheat ($P < 0.05$). Crude ash did not changed ($P > 0.05$). The highest crude protein content was obtained from the variety of Karatopak with a value of 14.77%, whereas the lowest value was obtained from the Altınöz variety with a value of 10.03%. Crude fat contents varied from a 1.13% (Seri-2013) to 1.59% (Altınbaşak). The dry matter contents ranged from a 91.13% (Karatopak) to 92.15% (Ceyhan-99). The lowest and highest ADF values were obtained from Gökkan (2.30%) and Altınbaşak (5.18%) varieties. The lowest and highest NDF contents were obtained from Gökkan (11.75%) and Altınbaşak (19.05%) varieties. The highest HEM value was obtained from Altınbaşak variety with a value of 13.87% KM. The gas production rate of bread wheat varieties ranged from 62.50 to 74.00 ml/200 mg DM. The metabolisable energy (ME) and net energy lactation (NEL) contents of bread wheat varieties ranged from 11.23 to 13.17 MJ/kg DM and 6.83 to 8.24 MJ/kg DM respectively.

Keywords: Bread wheat variety, Chemical composition, Digestibility, *In vitro* gas production, Nutritive value

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Determination of Population Density of Mediterranean Fruit Fly, *Ceratitis Capitata* (Wiedemann) (Diptera: Tephritidae) In Persimmon Orchards in Hatay Province

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Abstract

The Mediterranean fruit fly (Medfly), *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae), is one of the important pests of persimmon in Hatay province of Turkey. Studies were conducted in 2013-2014 to evaluate the population density of Medfly at persimmon orchards in Defne, Antakya, Dörtyol and Belen districts of Hatay province. The Econex yellow traps and pheromones (%95 trimedlure) and DDVP impregnated tablets were used. The pheromone traps were weekly checked and captured Medfly adults were counted and then cleaned. Pheromones in the traps were replaced with the new ones in every 90 days. In 2013, a total of 13944 Medfly adults were caught by pheromone traps. The highest number of the Medfly adults were caught by pheromone traps in Belen (6758), followed in Defne (3061), Antakya (2923), and Dörtyol (1202) districts. In 2014, a total of 10575 Medfly adults were caught by pheromone traps. The highest number of the Medfly adults were caught by pheromone traps in Belen district (4844), followed in Defne (4227), Antakya (1108), and Dörtyol (396) districts.

Keywords: Medfly, *Ceratitis capitata*, pheromone traps, persimmon, Hatay

Acknowledgement: This project was supported by University of Mustafa Kemal of Scientific Research Projects (BAP) (project number: 12162).



Microencapsulation of Bacteriocin for Food Preservation

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Abstract

In recent years, consumers and industry showed an increasing demand for safe natural food products. In this case, biopreservation is a good alternative to prevent the growth of pathogenic and spoilage microorganisms in foods and to extend the products shelf life. Bacteriocins are antimicrobial proteins produced by bacteria and widely used as natural food preservatives. However there are some challenges about maintenance or protection of bacteriocin activity. The most important of these is a reduction in its antimicrobial activity in food matrices due to inactivation by food constituents. These obstacles must be solved on the road to commercialization of bacteriocins. Stability issues of bacteriocin from interaction with food components may be overcome with microencapsulation technique. Microcapsules efficiently protect bacteriocin against stress factors. It was considered that bacteriocin microencapsulation can be a potential alternative for the application of these antimicrobial peptides as biopreservatives in food. In this review, we focused on some applications about bacteriocin microencapsulation for food preservation.

Keywords: Bacteriocin, nisin, microencapsulation

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The Effects of Different Seed Quantities and Cutting Times on Quality Properties of Kentucky bluegrass (*Poa pratensis* L. Geramino)**

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Abstract

The researched was conducted to investigate the effects of different seed rates and five cutting times (T1:15 June, T2:15 July, T3:15 August, T4:15 September and T5:15 October 2013) on the yield and some plant characteristics of Kentucky bluegrass (*Poa pratensis* L. Geramino). The experiment was carried out in completely randomised complete block with three replications at the Agricultural Application and Research Center of Iğdir University in the 2013. The investigated characters were covering rate, green grass yield, the plant height, colour, leaf size and turfgrass quality in the trial. As a results of experiments, 5, 10, 15, 20 ve 25 g of seed density per m² covering rate %8.5, 22.7, 49.6,51.8 and 57.0, green grass yield 83.3, 218.7,415.3, 457,3 and 514.0, plant height 7.9, 7.9, 8.4,8.6 and 8.3 cm, color 5.6, 5.6, 5.9, 5.9 and 6.0 (1-9 scala), leaf width 1.13, 1.19, 1.12, 1.14 and 1.14 mm, turf grass quality ranged from 1.19, 3.07, 4.93, 5.42 and 5.50 (1-9 scala), during the experiment of 2013. Under the conditions of Iğdir ecology, the highest green yield of grass, coverage ratio, colour and turfgrass quality were in the application of 25 g seeds per m². In respect of cutting times, the highest green yield and coverage rate at the T5 time, while the highest colour at T5, T1 and T2 times, respectively and turf grass quality was obtained at T5 and T4 times in the application of 25 g seeds per m² during the establishing year. It is concluded that the amount of seed to be recommended in 25 g per square, when all the features examined are taken into account of *Poa pratensis* L. Geramino grown in landscape establishment under the Iğdir ecological conditions.

Keywords: Kentucky bluegrass, *Poa pratensis*, seed density, cutting time, turfgrass quality

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The Flavor and Sensory Characteristics of Some Herbs and Spices

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Abstract

Spices are obtained from various parts of plants such as seeds, berries, fruits, buds, leaves, bulbs, rhizome, pistils, stems, bark. Most of spices and herbs grow mainly in the tropics and subtropics. Global production of spices which have been used in culinary and medicine since antiquity was reported 2.1 million tones from an area of 916232 hectare. Although spices were categorized into three main classes as hot (pepper, capsicum, ginger) mild (paprika, coriander) and aromatic spices (cinnamon, cumin, clove, fennel, fenugreek), there are 109 spice and condiment types categorized according to ISO 676. Herbs and spices in various forms as whole, ground and extract have been used in foods for flavoring (cinnamon, cumin, allspice etc.), seasoning (mustard, ginger, pepper), odour masking (garlic, clove, thyme etc.) and coloring (turmeric, saffron etc.) The essential oils derived from herbs and spices have played an important role in their flavor profiles and functional properties. Several studies on antioxidant, antibacterial, antifungal activities of herbs and spices were available in the literature. The major flavor compounds found in the herbs and spices can be summarized as eugenol, linalool, carvacrol, thymol, cineol, limonene, piperine, phellandrene, d-carvone, terpenes, cinnamaldehyde, gingerol, geraniol, gingerol, myristicin, turmerone, vanillin. Moreover, sensory lexicons like pungent, spicy, astringent, pepper-like, fruity, citrusy, floral, herbal, green, woody, earthy were developed by many sensory panels for spices and their essential oils. In this review, flavor profiles and sensory attributes of some herbs and spices are discussed in detail.

Keywords: Spices, Herbs, Aroma, Sensory



Adaptability of Edible Film and Coating Production into Industrial Scale

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Abstract

In food industry, packaging aims protecting and carrying of food, providing convenience and information to user. Generally, polymers originated from petrochemicals are used in food packaging because of their low-price. However, since it takes a long time to degrade the synthetic materials, their usages have brought some ecological problems. Environmental awareness has been increased in recent years with interest in use of biodegradable materials that are friendly with nature. Edible films and coatings are in the categories of biodegradable packaging materials and primarily formed from proteins, polysaccharides and lipids. Due to their hydrophilic nature, proteins and polysaccharides have high water vapor permeability, but their oxygen permeability is very low. Lipids show reverse characteristics due to their hydrophobic characters. Composite films may be designed to achieve a synergistic effect of combined features of pure components, even though, as with synthetic polymers, mechanical and barrier properties of composite edible films strongly depend on characteristics of constituting polymers and their compatibility. Recently there are some studies related to industrial production of edible films using extruder; however there are gaps in the scientific literature relating to edible coating. Using coatings for preservation of chocolate, cakes and fruits have more advantages than films; however applicability of the edible coatings in industrial usage has not been studied. Gelatin is a kind of protein which is obtained especially from collagen of mammalian tissues, bone and skin linkages and it is generally imported from abroad. Because of lower costs it is often produced from collagens of beef or pork. Besides, usage of lots of additives during its production is another disadvantage of gelatin application. The aim of the study is to formulate the best composition of coating solution with edible materials having improved barrier and mechanical properties to provide increasing possibility of usage of the coating solutions after recombination in industry.

Keywords: Packaging, biodegradability, edible film, edible coating

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Surimi and Surimi Products as A Fish Processing Technology

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Abstract

Surimi is refined fish myofibrillar proteins produced through various step-by-step processes including heading, gutting, filleting, deboning, washing, dewatering, refining, mixing with cryoprotectants, and freezing. According to literatures, surimi originated in Japan in 1115. The word 'surimi' comes from the Japanese words 'suru' meaning 'to process' and 'mash/mi' meaning 'meat'. Surimi is a paste of minced, processed fish used in the preparation of imitation seafood. In this recent, surimi production uses 2–3 million metric tonnes of fish from around the world, amounting to 2–3 percent of the world fisheries supply. The very extensive product varies range from traditional Asian preparations to sophisticated imitations and includes fish ham and sausages, fish cakes, sticks, chunks, bites, claws, scallops, patties fritters, rings, burgers, tofu and wraps. Surimi processing technology is a important method that used fish consumed or not consumed directly, as a raw material. In this review, surimi technology and surimi products were tried to explain.

Keywords: Surimi, Fish processing, Myofibrillar protein, Surimi Products

Quinoa Seeds as A Beneficial Nutrient and Several Quality Parameters of Quinoa Seed Oil

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Abstract

Quinoa is the common name for *Chenopodium quinoa* of the flowering plant family *Amaranthaceae*. It is grown as a grain crop primarily for its edible seeds. Quinoa is known for its exceptional nutritional value and potential health benefits. In this study, protein content, moisture contents and oil extraction yield of quinoa seeds were determined. Several quality parameters of quinoa seed oil (total phenolic compounds, antioxidant capacity, characterization of fatty acids and etc.) were determined. Results showed that the oil yield of solvent extraction is nearly 6%. Amount of total phenolic compounds of quinoa seed oil was found as 289.7 mgGA/L. According to the characterization of fatty acids, quinoa seed oil contain 57 % PUFA, 23 % MUFA, and 10 % SFA; the major of fatty acids were linoleic acid (46.32 %) oleic acid (21.46 %) palmitic acid (8.6 %) and α -linolenic acid (7.99 %). Antioxidant capacity was found to be 653.56 μ mol TE/L. Protein and moisture contents of the quinoa seeds were respectively 13.79 % and 6.2 %. The present study show that quinoa seeds have high nutritional quality due to its bstprotein quality, omega-3 (especially ALA), omega-6 (linoleic acid), omega-9 (oleic acid) fatty acid content and low amounts of saturated fatty acids.

Keywords: Quinoa seed, Fatty acid, Oilseed, Phenolic compound, Protein quality

Determination of Some Quality Parameters of Pasta Wheat with NIRS (Near-Infrared Reflectance Spectroscopy)

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Abstract

This study was conducted with the purpose to determine the pasta wheat quality parameters using NIRS at early stages, which is needed by pasta wheat trading and processing institutions and establishments, and especially wheat plant breeders. In this study, Foss NIRSystem XDS was used. Pasta wheat types at late stages which are subject to adaptation and plant breeding from test field of East Mediterranean Agricultural Research Institute and some standard varieties were used. In order to determine the reference values needed to construct calibration in NIRS analysis, pasta wheat samples were analysed by classical analysis methods. For this reason, moisture, hectoliter, hardness, gluten, protein, starch and zeleny sedimentation were carried out on the samples. In the study, classical analysis results on pasta wheat samples were found to change between the values as: moisture between 11.2% and 13%, hectoliter between 74.4kg/hl and 85.8kg/hl, hardness between 57psi and 71psi, gluten between 19.14% and 39.48%, protein between 9.6% and 16.9% starch 71.4% and 79%, and zeleny sedimentation between 16ml and 70ml. Coefficients of determination (RSQ) between classical analysis results and values predicted by NIRS were calculated as follows: for moisture 0.8071, for hectoliter 0.8959, for hardness 0.9398, for gluten 0.9704, for protein 0.9762, for starch 0.9189 and for zeleny sedimentation 0.9662. As a result, this study shows that NIRS is possibly a fast and efficient method to determine the quality parameters of pasta wheat, and can be used for the determination of wheat quality from beginning to the last stage of plant breeding process successfully, in order to supply customer with products in desired quality characteristics. Additionally, this is a rather advantageous analysis method since it does not require chemicals and qualified personnel, it gives results in a short time for many parameters and it has a sustainable update characteristics.

Keywords: Pasta wheat, quality, protein, gluten, NIRS

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Novel Technologies in Meat Industry

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Abstract

Processed meat products that include various types and regional variations are food of animal origins. Meat processing technologies generally consist of one or more of the technologies such as cutting, mixing, curing, utilization of additives, fermentation, drying, heat treatment and smoking. In the last decade, consumers demands focused on minimally processed and healthier products, thus, the changing consumer demands are causing the meat industry to embrace new technologies. The most investigated new preservation technologies can be classified into two groups such as non-thermal and thermal technologies. Non-thermal technologies include high hydrostatic pressure, ultraviolet light, pulsed light, ultrasound, ionizing radiation and pulsed electric field. The novel thermal technologies in meat industry are microwave heating and ohmic heating. The objective of this review is to describe the novel processing approaches for meat products manufacturing.

Keywords: Novel technologies, ohmic heating, pulsed electrical field, ultrasound



Simultaneous Determination of A Wide Spectrum of Bioactive Compounds in Edible Oils by Means of On-Line Column Switching SPE-FIA-HPLC/ELSD System

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Abstract

An improved SPE-FIA-HPLC/ELSD method has been developed for the simultaneous analysis of the bioactive compounds of commercial vegetable oils (*sunflower oil, corn oil, canola oil, soybean oil, and olive oil*) without a prior fractionation step and in a single run. The simultaneous analysis of bioactive compounds showed the major and minor lipid compounds as esters, triacylglycerides, sterols, tocopherols, diacylglycerides, free fatty acids, monoacylglycerides, and also the polar phospholipids. The on-line column switching SPE-FIA-HPLC/ELSD system was designed and set up by modifying Agilent 1200 Series HPLC system. For SPE separation, an Inertsil Sil 100 Å column (50 × 4.6 mm i.d., 5 µm) and for HPLC separation, a LiChrospher 100 Å Diol HPLC column (250 × 4.0 mm id., 5 µm) was adapted to the system. Also, to provide the desired flow path of the mobile phase in the system, two 2-position/6-port valve systems and a 2-position/10-port valve system were adapted. The identification and quantification of bioactive compounds, using calibration curves made with individual standards and the low coefficients of variation obtained in the inter- and intra-assays showed the suitability of the proposed method. The overall results of this work also confirm that the developed SPE-FIA-HPLC/ELSD method yields a simple, sensitive, stable, and comprehensive quantification of all the bioactive lipid classes. The developed gradient solvent system was able to separate with high reproducibility and quantify with accuracy the compounds, present in commercial different refined vegetable oils, without a prior fractionation step and in a single run. Therefore this method can be recommended for the simultaneous analysis of bioactive compounds in food products.

Keywords: Bioactive Compounds, Edible Oils, Column Switching, SPE-FIA-HPLC/ELSD

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Cicadellidae (Hemiptera) Species in Sweet Cherry Orchards of Eastern Mediterranean Region, Turkey

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Abstract

Turkey ranks the first for sweet cherry production of the world. Eastern Mediterranean Region has a major share in this production. Species of the Cicadellidae (Hemiptera) family build up significant population levels in fruit orchards as well as in cherry orchards. These are important pest species not only for their direct feeding damage but also for being potential vectors of the phytoplasma diseases. The current study was carried out in Adana, Niğde and Kahramanmaraş provinces in the Eastern Mediterranean region of Turkey to determine the species of Cicadellidae in sweet cherry orchards in 2014-2015. Samplings were done by beating sheet for trees and by sweep net for weeds in spring (May-June) and autumn (October-November). Fifty-two different species belonging to 35 genera of Cicadellidae family were morphologically identified. Among these species, *Psammotettix striatus* and *P. provincialis* were found as the most common species with the rate of 32.90 and 17.50 %, respectively.

Keywords: Sweet cherry, Cicadellidae, Turkey

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Viruses Infecting Small Fruits in Turkey

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Abstract

Small fruits are economically important crops in many countries throughout the world and are gaining importance also in Turkey. Leaf mottling, reddening, yellowing, vein clearing and mosaic symptoms have been observed in several *Rubus* spp. and *Vaccinium* spp. plantations during surveys conducted between 2013 and 2015 in Mediterranean and Marmara regions for *Rubus* spp. and Blacksea region for *Vaccinium* spp., *Rubus* spp. samples were tested by DAS-ELISA for *Raspberry bushy dwarf virus* (RBDV), *Arabis mosaic virus* (ArMV), *Strawberry latent ringspot virus* (SLRSV), *Tomato ringspot virus* (ToRSV) and *Tobacco ringspot virus* (TRSV) and blueberry samples for *Blueberry leaf mottle virus* (BLMoV), *Blueberry scorch virus* (BIScV), *Blueberry shock virus* (BIShV) and *Blueberry shoestring virus* (BSSV). Positive samples and samples with elevated O.D. readings were tested by RT-PCR to check the ELISA results. Only the presence of RBDV was confirmed. Additionally, several *Rubus* spp. samples were tested for the presence of *Raspberry leaf mottle virus* (RLMV), *Rubus yellow net virus* (RYNV), and *Black raspberry necrosis virus* (BRNV) using RT-PCR. None of the tested viruses was confirmed. Selected *Vaccinium* spp. samples, some with mosaic symptoms were tested by RT-PCR for infection with *Blueberry mosaic associated virus* (BIMaV). The presence of BIMaV was confirmed only in symptomatic samples.

Keywords: Small fruits, virus, detection, RT-PCR.

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Determination of Different Ratios of Alfalfa (*Medicago Sativa* L.) and Maize (*Zea Mays* L.) Mixtures on Silage Quality

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Abstract:

In this study, quality properties of alfalfa (A) and maize (M) silages consisting of some of their mixtures (20 % A + 80 % M, 40 % A + 60 % M, 60 % A + 40 % M, 80 % A + 20 % M, % 100 A and % 100 M) were reviewed. In an attempt to make silage, ground approximately in the size of 1.5-2 cm in single row maize silage harvester during the period of maize doughing and last cutting of alfalfa. The materials obtained were mixed in different proportions on the basis of age weight, squeezed and filled in 1.5 l plastic bag. The bags were opened at the end of 60 day ensiling period. In silages; properties such as dry matter rate, pH, fleig point, crude protein, ADF and NDF were determined. In general, silage pH, crude protein rate and ADF rate increased based on the increase in alfalfa rate in the mixture.

Keywords: Maize, alfalfa, mixture, silage, quality

Determination of Peas Genotypes for Yield and Yield Components in Cukurova Region

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Abstract

This research was carried out to determine the seed yield and yield components of some pea genotypes under Çukurova ecological conditions during 2014-2015 at Eastern Mediterranean Agricultural Research Institute. Genotypes and cultivars from ICARDA and Menemen Gene Bank were used as trial material. According to the results of the observation at genotypes, were examine plant height, flowering number of day, seed yield, 100 seed weight. According to the results of the analyses; the highest and lowest seed yield values 302.4-102.8 kg/da, flowering number of day values 96.3-76.6 day, plant height values 158.8-55.5 cm, 100 seed weight 26.3-16.00 g were obtained from genotypes. This results provide an initial step toward the identification of (*Pisum sativum* L.) that may be useful for the development of breeding *Pisum sativum* L.

Keywords: Yield, Yield Component, Genotype

The Effects of Gravading Process and Vaccum Packing on The Fatty Acid Profile of Carp Filets (*Cyprinus Carpio*)

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Abstract

Minimally-processed products play a fundamental role in the fish-derived food. Thus, gravads, traditional Scandinavian products belonging to this group, are obtained basically from salmon, trout, and Greenland halibut, mackerel and herring. Gravads can be eaten without heating/cooking since they are the ready to eat (RTE) products. Gravading is the important preservative processing technology because of the reduction in water activity and inhibition of many spoilage microorganisms. In the current study, carp was used as raw material for gravading process. The aim of this study was to compare the effects of gravading and vacuum packing on the fatty acid profile *Cyprinus carpio* before and after process. The gravading process involved rubbing both sides of the fillet with a mixture of salt and sugar (1:2) at a ratio of 350 g of mixture per kg of fillets. They were then matched meatside to meatside and placed in stainless steel containers under light pressure. The gravad ripening process was conducted for 48 h at 3 °C. After that, the gravad was removed from the brine, dried with paper cloth, vacuum packed in polyethylene bags and stored for 8 weeks at 3±1 °C. Fresh fillets (FF) as well as freshly prepared gravad (FG) and stored gravads (SG) were used for analysis. The results of this study showed that the rates of SFA, MUFA and PUFA in raw fish were 22.59%, 66.54% and 5.98% whereas their values were 22.88%, 64.66% and 5.86% in fresh gravad. The ratios of SFA, MUFA and PUFA in gravad after storage of 8 weeks were 20.45%, 67.19%, 6.71%, respectively. The level of SFA decreased in gravad whereas MUFA content increased after storage of 8 weeks. Although PUFA content slightly decreased in the fresh gravad, its level increased after storage of 8 weeks.

Keywords: Gravad, carp, vacuum packing, fatty acids, PUFA



Banana Starch as Potential Functional Food Component⁽¹⁾

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Abstract

Banana is a very nutritious food. It is a good source of minerals, vitamins and also dietary fiber. In addition to that it is also a good source of starch, especially in its green form. Green bananas contains around 70% starch, a percentage comparable to well-known commercial raw materials for starch production. However, starch content of banana decreased dramatically during ripening. Therefore, it is necessary to process the green bananas for starch production. There are a number of studies in the literature about the physicochemical, technological and nutritional properties of banana starch. This work were undertaken to review the current literature about banana starch and to explore its potentiality as functional food component. The flour form green banana is generally used in gluten free formulations and as a source of resistant starch. Both alkaline and non-alkaline methods have been used for starch extraction from banana. Raw or modified banana starch has been successfully utilized in a number of cereal-based products. It is indicated that the level of healthy resistant starch and the slowly digestible carbohydrates content are significantly increased by incorporation of banana starch into these formulations. Involvement of banana starch in some additional health benefits are also reported in the literature. Eventually, banana starch has some unique properties in terms of functional properties and nutritional benefits. Thus, further investigation required on commercial utilization of banana starch and its derivatives.

Keywords: Banana starch, functional properties, nutritional benefit

⁽¹⁾ This study is funded by the Scientific Research Projects Units of University of Mersin with project number 2016-1-TP3-1397

Some Biological Features and Current Status of Spotted Stem Borer *Chilo Partellus* (Swinhoe) in Pakistan and Turkey

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Abstract

Maize (*Zea mays* L.) is the third most significant cereal crop in the world after wheat and rice. It is directly consumed as food for human and fodder for animals in Pakistan as well as in Turkey. Spotted stem borer; *Chilo partellus* (Swinhoe) is one of the major pests of maize and sorghum globally, especially in Asia and Africa. *C. partellus* has been reported to cause severe losses in maize crop throughout its geographical distribution including Pakistan. The pest was recorded in maize field in some provinces in the East Mediterranean Region of Turkey in 2014 and 2015. Last year, it was observed almost in all maize fields of Kırıkhan, Hassa and Demirköprü districts of Amik plain of Turkey. *C. partellus* has a broad variety of hosts, both wild and cultivated plants. The yield losses ranging from 24-75% have been observed by the attack of *C. partellus* solely. In Peshawar valley of Pakistan, 10-50% damage was reported in 2007. A variety of insecticides especially granular formulations has been applied in the field for the control of this particular pest. However, a number of bio-control agents have been reported to kill the pest at egg, larval and pupal stages. Parasitoid *Trichogramma* eggs were used as bio control agent, which can be highly efficacious and economical as it can control the pest in the egg stage. *Trichogramma brassicae* Bezdenko (Trichogrammatidae) and *Telenomus busseolae* (Gahan) (Platygastridae) for *C. partellus* were recorded for the first time in Turkey in 2016.

Keywords: Maize, pest, *Chilo partellus* (Swinhoe), Lepidoptera, Pakistan, Turkey

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Effects of High-Pressure Technology on The Functional Properties of Dairy Foods

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Abstract

High pressure processing (HPP) is one of the novel technologies to produce microbiologically safe food. HPP is a non-thermal food processing method, wherein the food is subjected to a very high pressure ranging between 100-800 MPa in order to prevent undesirable chemical and microbiological reactions, and hence, prolong the shelf-life. HPP is also called as “high hydrostatic processing, ultra-high pressure processing or isostatic processing”. In dairy products, HHP has the potential to modify the functional properties of proteins, polysaccharides and alter biochemical reactions without significantly affecting the nutritional and sensory properties. HPP treatment induces significant changes in milk components particularly in proteins (whey proteins and caseins), as well as on their applicability in innovative dairy productions. HPP influences technological properties of various milk products such as firmness, water-holding capacity of the gel and network structure, cheese yield, rennet coagulation time and ripening.

Keywords: High pressure technology, Dairy foods, Functional properties

Determination of Some Properties of Wines Produced Using Traditional and Ultrasound Maceration

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Abstract

In red wine vinification process, solid parts of grapes are kept a defined time in contact, in order to extract the colouring substances located in the skins. Traditional maceration technique in wine production takes a long time. In this study, it was aimed to investigate the possibility of using ultrasonic maceration technique instead of traditional maceration technique. Öküzgözü grape grown in Elazığ region was used as material. Two different maceration techniques were applied to the grapes separated and cleaned from the stem and leaves. The first method is traditional maceration technique which is called the control group and lasts about 7 day. The other is ultrasonic maceration technique applied at 37 Hz frequency, different temperature (25, 35, 45 °C) and different times (5, 10, 15 minute). Soluble solids (brix), pH value, total acidity value (% tartaric acid), Hunter colour values (L^* , a^* , b^*), alcohol content (v/v %), total phenolic compounds quantity (mg gallic acid equivalent (GAE)/L) and total anthocyanin quantity (mg cyanidin 3-glucoside (C3G)/L) were determined. The highest quantity of total antocyanin was determined as 56,13 mg C3G/L in consequence of 15 minutes at 45 °C within ultrasound assisted maceration. The highest quantity of total phenolic compound was determined as 447,06 mg GAE/L in consequence of ultrasonic maceration for 10 minutes at 45 °C within ultrasound assisted maceration. Moreover, L^* , a^* , b^* values ranged from (4.82 to 20.76), (12.31 to 28.14), (5.90 to 11.40) at the end of fermentation, respectively.

Keywords: Wine, Ultrasound maceration, Öküzgözü



Effect of Ultrasound Application on Wine Ageing

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Abstract

It is intended to produce high quality wines which maintain the taste and aroma for extended period of time by the wine producers. Young wines can maintain their taste and aroma for only a few years. Positive organoleptic properties can be protected and developed in ageing wines for years. Traditional oak barrel has been extensively employed for wine ageing but there are some disadvantages of barrels. The ageing process in barrels require extended period of time and high financial investment. Moreover, barrels may be contaminated by undesirable microorganisms. Because of these reasons, there is a great interest in finding new techniques that permits to enhance the quality of wines after ageing process or that allows to accelerate this stage of production. Ultrasound application is one of the methods for accelerating wine ageing. Ultrasound is based on acoustic cavitation. Acoustic cavitation, which is induced by ultrasonic waves in liquid, produce high localized temperature and pressure, leads to chemical reactions and accelerates reaction rates. Accordingly, ultrasound application for wine can promote the interaction of wine contents that simulates those happening after many years of natural ageing. In this review, it was aimed to mention about the effect of ultrasound technology on wine ageing process.

Keywords: Wine, Ageing, Ultrasound technology

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The Relationships Between Some Physicochemical Properties and Nutrient Element Content of Paddy Soils on Alluvial Land in Terme Region

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Abstract

Rice is one of the most important crops, which has valuable income for regional economy. In order to obtain optimum yield about rice cultivation, it should be known soil properties of land in where has been grown rice. Otherwise, it can be faced with deprivation of yield due to misuse or applications for rice land management. In this study, it was determined relationships between physico-chemical properties of soil located on alluvial lands and nutrient elements in Terme district of Samsun province. Clay, silt and sand content of soils varies between 19.8-67.7%, 14.5-32.0% and 1.7-65.7%, respectively. In addition to that, it was found that organic matter, EC, pH and lime content are 0.63-4.87%, 0.08-1.66 dS/m, 5.16-7.45 and 0.58-1.94, respectively. Moreover, macro and micro nutrient element contents were determined as %0.03-0.24, 5.30-46.90 mg/kg, 45.0-63.5 mg/kg, 5.03-212.30 mg/kg, 6.11-91.32 mg/kg, 0.03-1.36 mg/kg, 3.83-15.90 mg/kg and 0.02-1.24 mg/kg for total N, available P, exchangeable K, available Fe, Mn, Zn, Cu and B. According to statistical analysis results, it was found that significantly important relation between clay content of soil and silt, sand, organic matter, total N, Mn. Besides, there is significant relation also between sand and OM, N, Mn. Another significant relation was also determined between OM and total N, Cu. Other significant relations are between EC and K, pH and K, Mn, Cu, total N and Cu, K and Zn, Cu.

Keywords: Paddy soil, Alluvial land, Physico-chemical properties, Nutrient elements



Antimicrobial Effect of Nanoemulsions on Spoilage Bacteria Isolated from Sea Bass

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Abstract

The antimicrobial activity of six nanoemulsion based on plant oil (sunflower, corn, hazelnut, soy bean, olive and canola) was tested against selected six fish spoilage bacteria isolated from sea bass (*Dicentrarchus labrax*) by minimum inhibitory concentration (MIC) as described by the Clinical and Laboratory Standards Institute (2008). Total forty-five isolates was obtained from spoiled fish and eleven strains of them were identified by Analytical Profile Index. The predominant microflora of sea bass consisted of the genera *Sphingomonas* (26.19%), *Stenotrophomonas* (23.80%), *Pseudomonas* (23.80%) and *Aeromonas* (16.66%). Study results showed that antimicrobial activity varied depending on bacterial strains tested, and nanoemulsions based on soybean, corn and olive oil had the highest antimicrobial activity against spoilage bacteria. Corn and canola nanoemulsions were strongly inhibited the growth of *Stenotrophomonas maltophilia*, whilst soy bean had the highest antimicrobial activity against growth of *Sphingomonas paucimobilis* with MIC value of 6.25 ml/ml. *Ochrobactrum anthropi* was more susceptible strain against nanoemulsions with ranging MIC value from 25 ml/ml for hazelnut to 0.78 ml/ml for olive. Among bacteria tested, *Aeromonas hydrophila/caviae/sobria* were the most resistant strain to nanoemulsions based on plant oils apart from olive. Soybean and olive nanoemulsions had similar antimicrobial effect on growth of *Pseudomonas luteola* with MIC value of 12.5 ml/ml.

Keywords: Fish spoilage bacteria, Nanoemulsions, Plant oils

The Comparison of Alternative Methods For Surimi Production from Dark Muscle

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Abstract

Surimi is a minced fish meat, subjected to consecutive washes, where they remove fat, blood, odoriferous matters and proteins which were soluble in water, turning into a white paste with any odor and flavor of fish. High quality surimi products are not only consumed directly, but also it have been serves as a potential raw material for different seafood as sausage, fish ball, fish paste and burger. Aquatic sources proteins are among the main suppliers for the preparation of bioactive peptides by advantage of their stability and valuable amino acid substance. Fish species, chopping temperature and time, and salting time can effect the quality and strength of the surimi prepared from fish. Generally surimi produced from white-muscle fish species but over fishing and the extension of consumption of surimi and surimi-based products, cause to researchers and manufacturers to consider for alternative species as raw materials. Novel reseaches proposed that high-quality surimi-like materials with better whiteness can be achieved when dark muscle is eliminated as much as possible. Several methods have been cultivated in order to enhance the color of surimi made from dark fish species like removing dark muscle by deep skinning apparatus or by applying high pressure water jets, and the use of whitening agents. In this review, these methods will be compared and discussed in detail.

Keywords: Surimi, seafood, fish meat, dark muscle fish

Some Properties Of The Lyophilized Black Mulberry (*Morus Nigra* L.) Water Extract

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Abstract

Black mulberry (*Morus nigra* L.) belongs to the genus *Morus* of the family Moraceae. Black mulberry is an interesting fruit which has a extraordinary color and unique pleasant taste. Traditionally, these fruits are known as natural medicines in addition to nutritional and taste qualities. Black mulberry fruits are also used in jams, juices, liquors, natural dyes as well as in the cosmetics industry. Some properties of lyophilized black mulberry water extract (LBWE) were determined in this research. For this purpose, the black mulberry lyophilized water extract was obtained, afterwards, total phenolic content (Folin-ciocalteu method), DPPH* free radical scavenging ability, total monomeric anthocyanin content (pH-differential method), metal chelating activity, pH, titratable acidity, and color (L*, a* and b*) values were determined. The average total phenolic content, DPPH* free radical scavenging ability and metal chelating activity of lyophilized black mulberry water extract were 2032.87±40.16 mg GAE/100g, 68.12±2.09% and 61.92±1.11%, respectively. Total monomeric anthocyanin content of LBWE was determined 1572.41±14.01 mg cyanidin 3-glycosides equivalent per 100g dry weight. The pH, titratable acidity and L*, a* and b* values of lyophilized black mulberry water extract were 3.94±0.02, 16.01±0.10%, 17.52±0.14, 11.05±0.49 and 1.11±0.08, respectively. According to this results, black mulberry is a highly suitable source as food coloring and antioxidant additive because of its high antioxidant activity and high level of anthocyanin content.

Keywords: Black mulberry, lyophilized black mulberry water extract, *Morus nigra* L., total phenolic content, anthocyanin, antioxidant activity

Acknowledgement: This study was supported by “Ordu University Scientific Research Projects Coordination Unit” (Project code; TF-1627)

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An Uncultured Bacterium Associated With Infection in *Brassica Oleracea Italica* in Malatya Province

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Abstract

Broccoli (*Brassica oleracea Italica*) plants with symptoms of leaf curling, enation, fasciation, dwarfing, vein banding, swelling and cracking symptoms were observed in greenhouse grown plants in Malatya province in 2016. Genomic DNA isolation was made from leaf tissue and midrib of symptomatic and non-symptomatic plants. By using R16mF2/R16mR1 and R16F2n/R16R2 primers 16S rDNA fragments were subjected to nested polymerase chain reaction (Nested-PCR) for the involvement of possible phytoplasma infection. Symptomatic plants were yielded approx. 1.2-kb DNA fragments. Amplified PCR fragments were cloned into a proper plasmid vector and transformed into competent *Escherichia coli* strain JM 109. Recombinant plasmid DNA was isolated and sequenced bi-directionally. The presence of white fly was observed on and around the symptomatic plants. Fifteen white flies were sampled from greenhouse to assess the presence of the suspected agent. The genomic DNA was isolated and subjected to Nested-PCR by using same primer pairs. None of the tested white fly was reacted positive for the presence of expected DNA fragments. Based on sequence data, phylogeny analysis and virtual restriction fragment length polymorphism (RFLP) analysis, an unidentified and uncultured bacterium has been reported in broccoli plants in Malatya. The attempts to visualize the agent by electron microscopy in isolated host tissues are still in progress.

Keywords: Broccoli, PCR, uncultured bacteria, white fly

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Fish Antifreeze Proteins and Applications

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Abstract

Many preservatives (cryoprotectants) are added to the fish fileto and grounded fish meat for protecting fish meat texture and taste. However, the European Union permits the use of very little additives for all fillet products. For this reason, the use of antifreeze proteins (AFP), as a new class of cryoprotectants, is increasing. The addition of AFPs into food known knowledge to be able to control ice crystal size in meat. The addition of AFPs into fish products prevents the loss of dripping water during the thawing of these products and preserves the textural quality. The applications of AFP in aquaculture are determined as using AFP for warm water fish species during adaptation into cold water and also used processed seafood products to extend the shelf life. The aim of this study is to examine the studies on the new applications of AFP which are used in so many different fields.

Keywords: Antifreeze proteins, mechanical and cryogenic freezers, frozen storage, food, freezing

The Effect of Salicylic Acid And Humic Acid Applications on Some Properties of Lentil

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Abstract

This study was carried out to determine response of the humic acids and salicylic acids applications for lentil (*Lens culinaris*) under Van conditions during 2013 to determine some yield components. At the end of the experiment was determined the first pod size, plant height, number of pods, number of pods per grain, grain weight, number of first branches, number of second branches, biologic yield and grain yield. Salicylic acid and humic acid applications affected on biological yield ($P<0.01$), grain yield ($P<0.05$), grain weight ($P<0.01$), number of pods ($P<0.01$), number of grain in pods ($P<0.01$), number of first branches ($P<0.05$) and number of second branches ($P<0.05$). According to control, salicylic acid and humic acid applications increased the first pod size, biological yield, grain yield, number of first branches, number of second branches, grain weight, number of pods and number of pods per pod. The highest values were determined In the SA x HA interactions, number of first branches, biological yield, grain yield, number of first branches, number of pods, and number of pods per grain. 6.83 cm, 640.37 g, 310.97 g, 3.07 number, 44.50 number and 61.27 number respectively. In the second branch and grain weight the highest value was determined to be 5.40 number and 24.73 g in salicylic acid application only. At the end of this study, we found that salicylic acid and humic acid applications work together better.

Keywords; Lentil, humic acids, salicylic acids, yield

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Determination of Some Properties of Jams Produced With Sweet And Sour Pomegranate

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Abstract

In this study, it was aimed to produce jam with sweet and sour pomegranate. Two different techniques were applied to produce jam with sweet and sour pomegranate. The first method is traditional technique which is not added any stabilizer for thickening. In the second, 1% pectin was added to provide the consistency of jam produced sweet or sour pomegranate. Total dry matter quantity, soluble solids (Brix), pH value, total acidity value, water activity, total phenolic compounds quantity, total anthocyanin quantity, Hunter colour values (L*, a*, b*) of jams produced with pomegranate were determined. Moreover, Jam samples were evaluated for their sensory properties. Total dry matter, pH, total acidity value and water activity of jams ranged from (68.27% to 75.51%), (3.11 to 3.33), (0.67% to 0.78%) and (0.76 to 0.79), respectively. Additionally, L*, a*, b* values of jam samples ranged from (19.83 to 22.89), (7.34 to 15.61), (1.99 to 5.80) respectively. While the highest quantity of total phenolic compound was determined as 1111.77 mg GAE/kg at jam produced with sweet pomegranate added 1% pectin. The lowest quantity of total phenolic compound was determined as 855.88 mg GAE/kg at jam produced with sour pomegranate added 1% pectin. When the results of the sensory analysis were examined, the sweet pomegranate jam produced by the traditional method has the highest average value.

Keywords: Jam, sweet pomegranate, sour pomegranate, pectin, phenolics

Allelopathic Effects of Some Herbs and Medicinal Plants' Extracts on Seed Germination and Seedling Growth of Pepper

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Abstract

Some plants have natural substances in their leaves, flowers, and fruits, and roots that can alternately inhibit the growth rate of other plants. Laboratory and greenhouse experiments were conducted to evaluate the allelopathic effects of some herbs and medicinal plants on seed germination and seedling growth pepper (*Capsicum annuum* L.). Water extracts of fennel (*Foeniculum vulgare*), mallow (*Malva sylvestris*), red clover (*Trifolium pratense* L.), mustard (*Brassica nigra*), dill (*Anethum graveolens*), rue (*Ruta graveolens* L.), cumin (*Cuminum cyminum* L.) and licorice (*Glycyrrhiza glabra* L.) were prepared from the different plant parts and tested for inhibitory activity on seed germination and seedling growth of pepper. Final germination rate, final emergence rate, number of true leaves, shoots height, stem caliper, shoot fresh and dry weights, and root fresh and dry weights of pepper seedlings were recorded for growth comparisons. Results of the study showed that water extracts of evaluated plant species reduced germination and inhibited seedling growth of pepper in comparison with the control. It was found that the inhibitory effects were often dependent on the concentration. However, the degree of inhibition varied among the tested plant species.

Keywords: Allelopathy, Medicinal plants, Pepper, Germination, Seedling growth

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Effects of Humic Acid Applications on Nitrogen Use Efficiency of Lettuce (*Lactuca Sativa*)

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Abstract

Lettuce (*Lactuca sativa*) is the most widely grown and important food in the world for human nutrition as well as a major source of mineral nutrition. Fertilizers used to improve lettuce yield and quality should be selected very carefully. The present study was conducted to investigate the effects of humic acid treatments on nutrient use efficiency of lettuce plants. Five different humic acid doses (0, 3, 6, 9, and 12 L da⁻¹) were applied to pots filled with 4 kg of soil. Experiments were conducted in 5 replications in 25 pots. Humic acid treatments were applied before sowing the seeds to soil. Initial soil sampling was performed to identify initial physical and chemical soil characteristics. Plants were harvested at the end of experimental period and dry-fresh plant weights, nitrogen and nitrate accumulation levels were investigated. Results revealed that humic acid treatments increased nitrogen use efficiency of lettuce plants, specially 6 L da⁻¹ application doses of humic acid. It was also observed that especially humic acid treatments reduced nitrate accumulation levels.

Keywords: Lettuce, humic acid, nitrogen use efficiency

The Effects of Different Growing Media on Plant Growth Criteria of Some Bulbous Ornamental Plants (*Hyacinthusorientalis* ‘Pink Pearl’, *Narcissus* ‘Mounthood’ Ve *Tulipagesneriana* ‘Golden Apeldoorm’)

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Abstract

In this study, it was aimed that the effects of different growing media on plant growth criteria of some bulbous ornamental plants (*hyacinthusorientalis* ‘pink pearl’, *narcissus* ‘mounthood’ ve *tulipagesneriana* ‘golden apeldoorm’). The experiment was conducted out in randomize experimental design as three replication. Peat, perlite, vermiculture and aquaculture were used as plant growth media. Hogland nutrient solution was added each growing media. The flowering time and flower fading time were determined during experiment. On the other hand, leaf number, leaf length, leaf width, plant length, flower length, flower diameter. The lowest and highest leaf number, leaf length, leaf width, plant length, flower length, flower diameter and stem diameter means were in range of 6-6.78 number, 136.01-169.53 mm, 19.37-24.20 mm, 189.39-203.45 mm, 71.21-89.20 mm, 47.70-54.00 mm, 8.12-7.13 mm in the hyacinth plants respectively. The lowest and highest leaf number, leaf length, leaf width, plant length, flower length, flower diameter and stem diameter means of the narcissus plant were found as 6.08-7.50 number, 362.21-483.88 mm, 14.03-15.40 mm, 451.90-565.75 mm, 86.87-96.01 mm, 74.07-86.58 mm, 8.10-9.63 mm respectively. The lowest and highest leaf number, leaf length, leaf width, plant length, flower length, flower diameter and stem diameter means were in range of 3.00-3.42 number, 91.85-138.29 mm, 44.01-54.93 mm, 259.64-303.87 mm, 65.27-70.97 mm, 61.67-66.38 mm, 4.93-5.78 mm in the tulip plants respectively. It was noticed that plant growth media, the highest means belong leaf length, flower length and stem diameter were obtained in peat growth media. The highest leaf number, leaf length and plant length were found in vermiculite growth media.

Keywords: Hyacinth, Narcissus, Tulip, Growth media.

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Novel Technologies Used in Freezing of Foods

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Abstract

Freezing technology is a food preservation method that enables food production with high quality and long storage life. However, the freezing process may not enable the same quality of product to be obtained in all foods. This technology can cause different physical and chemical quality changes in different foods. In order to minimize these quality changes, some new freezing technologies have been the subject of many researches. In this work, novel innovative freezing technologies which could help to produce higher quality frozen food such as pressure-assisted freezing, magnetic resonance assisted freezing, microwave assisted freezing, radio frequency assisted freezing, ultrasound assisted freezing, dehydrofreezing, pulsed electric field assisted freezing are discussed.

Keywords: Food freezing, Novel technology, Food quality.

Determination Of Earlier And Yield Value In Some Barley (*Hordeum Vulgare L.*) Varieties Grown In The Eastern Mediterranean

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Abstract

This research was made to determine early and high yield barley varieties in different barley varieties in the ecological conditions of Adana. Field trials was established in East Mediterranean Agricultural Research Institute, trial fields between November 2015-May 2016. Trials was established according to Randomised Complete Block Design with 4 replications. 25 barley varieties in the study were used as seed material. Akhisar-98, Vamık hoca-98, Hilal, Kendal and Samyeli varieties were included as standard. In this study; Plant height (cm), duration of spike (days), duration of maturation (days) and yield (kg/da) were measured. Plant height values varied between 99-135 cm. While the highest plant height value was 135 cm in the Akhisar-98 variety, the lowest plant height value was measured as 99 cm in the IBYT-MRA-21 genotype. The lowest number of days of spike was found in the IBYT-LRA-10 genotype with 94.75 days, while the highest number of days of spike was determined in the Akhisar-98 variety a value of 101.50 days. The highest yield value was obtained at 772.67 kg/da in the IBYT-MRA-25 genotype with the lowest maturation day number of 26.25 days.

Keywords: Barley (*Hordeum vulgare L.*), duration of spike, duration of maturation, grain yield

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Economical Evaluation of Wheat-Silage Maize Rotation in Adana Province Ecological Conditions

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Abstract

In this study; economic evaluation of three different sowing methods was carried out on wheat-silage maize rotation. All of the silage corn sowing was done on the wheat residue. Flat sowing and two different ridge sowing methods were used in maize silage cultivation. The width of the permanent beds were as set to at 70 and 140 cm. Corn sowing was carried out single row on normal beds and two rows on wide ridges. Seeding norm in all the silage sowing methods were as set to 70*15 cm. Alternative cost elements method was used as economic analysis method. The highest absolute profit was determined as 196,41 TL/da in the flat sowing method which is the conventional sowing method in wheat cultivation. The highest absolute profit in silage corn was found to be 344,02 TL/da in permanent bed sowing method. The highest net gain in terms of rotation was calculated as 484,15 TL/da in wheat and silage maize cultivated.

Keywords: Residue sowing, permanent bed sowing, gross profit, absolute profit



Antifungal Effects of Boron Derivatives Against *Geotrichum Citri-Auratii*, The Causal Agent of Postharvest Citrus Sour Rot

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Abstract

In this study, antifungal activities of boron products were searched against postharvest sour rot disease caused by *Geotrichum citri-aurantii* on citrus in vitro and in vivo. In vitro studies, 0.2, 0.4, 0.6, 0.8, 1.0 and 2.0 ml concentrations of 10% Etidot-67 were examined effects on arthroconidia germination and mycelial growth. Eventually, as concentration increases, a linear reduction occurred in both mycelial growth and arthroconidia germination. The highest effects on mycelial growth and arthroconidia germination were determined in 96.6% and 85.5% levels, respectively. Antifungal effects of boric acid (0.3%), borax (0.6%), boric acid (0.3%) + borax (0.6%) on mycelial growth and arthroconidia germination were examined. The highest effects on both mycelial growth and arthroconidia germination were recorded in borax by 95% and 92.5% respectively. Effect of boron derivatives on sour rot disease in semi commercial trial was the highest in treatments boric acid+borax (30+60g) mixture and 45g etidot-67 with 97.8%. Considering the quality parameters observed in fruits treated, the juice content, the total soluble solid, titratable acidity and pH were the highest in boric acid + borax mixture.

Keywords: *Geotrichum citri-aurantii*, Etidot, Borax, Boric acid

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Susceptibility of Some Bread Wheat Varieties to Foliar Diseases in The West Mediterranean Region of Turkey

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Abstract

This study was carried out to examine responses of some bread wheat varieties against two-foliar disease, Septoria leaf blotch (SLB) and Powdery mildew (PM) under natural infection conditions of West Mediterranean Region of Turkey. During the growing season in 2015-2016, field trials were set up a randomized complete block design with four replications in Antalya Province. In the experiments, a total of 25 bread wheat varieties were screened for both diseases. In the evaluations of the diseases, 0-9 and 00-99 scales were used for PM and SLB, respectively. In the study, no cultivar showed resistance to SLB. However, cv. Adana-99, Ziyabey-98, Karatopak and Ceyhan-99 were moderately resistant, while cv. Pamukova-97, Yüreğir-89, Gökkan, Cumhuriyet-75, Gönen-98, Basribey-95 ve Momtchill were susceptible to SLB. Comparing with SLB, disease scores of PM were low. Among the varieties, different host responses and accordingly yield values were determined. The study suggested that SLB have a significant impact on growth and yield potential of some bread wheat varieties in the West Mediterranean Region.

Keywords: Resistance, Wheat, Fungal diseases

Studies on Pests in Some Minor Vegetables Cultivated in Antalya Province

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Abstract

Minor crops are widely produced as being green leafy vegetables and they are important as nutrients for human health. However, during production of these products, great economic losses can be seen due to pests. To our knowledge, there is no study in our region on pests in the minor products. The aim of this study, therefore, is to determine the pests and their damage in the minor crops. This survey studies were carried out in the fields of lettuce, parsley, cress, rocket, dill and spinach in Antalya province in 2016-2017. These studies showed that *Frankliniella occidentalis* Pergande (Thysanoptera: Thripidae) and *Heliothis armigera* (Hübner, 1805) (Lepidoptera: Noctuidae) were detected in all minor plants except dill. *Spodoptera littoralis* Boisduval, 1833 (Lepidoptera: Noctuidae) were found only in a few lettuce and purslane plants. *Liriomyza* spp. (Diptera: Agromyzidae) was found in a small number of parsley and lettuce plants. The snail (Gastropoda: Helicidae) was found only in lettuce and spinach, but its risk was higher in lettuce. It has been observed that *Tetranychus urticae* (Acari: Tetranychidae) from the mite group rarely causes damage to the lettuce. *Phyllotreta* spp., were observed on rocket, cress and parsley, but this pest was harmful to rocket. The damage of the aphids [*Uroleucon sonchi* (Linnaeus), *Lipaphis erysimi* (Kaltenbach), *Hyperomyzus lactucae* (Linnaeus), *Myzus (Nectarosiphon) persicae* (Sulzer) (Hemiptera: Aphididae)] was found to be significant in the lettuce. Whiteflies [*Bemisia tabaci* and *Trialeurodes vaporariorum* (Homoptera: Aleyrodidae)] were detected only in lettuce plant at low density. However, aphids and whiteflies are important since they are vectors of some virus diseases. The pests determined in this study are known in Antalya province, but they are the first records in the minor crops.

Keywords: Pests, lettuce, parsley, rocket, cress, dill, Purslane, spinach, Antalya

A New Pest In Globe Artichoke Production Areas Of The Western Mediterranean Region: *Vanessa Cardui* (Linnaeus, 1758) (Lepidoptera: Nymphalidae)

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Abstract

Globe artichoke (*Cynara cardunculus* var. *Scolymus* L.), native to the Mediterranean Basin, is one of the most important tastes of Mediterranean cuisine and is a rich source of bioactive phenolic compounds, inulin, fiber and minerals. In addition to its nutritional value, the artichoke has a very important place in terms of human health and historical background dating back to the time of the ancient Greeks and the Romans. With a 34576 tonnes production, Turkey ranks 12th in artichoke production in the Worldwide. Artichoke is mostly grown in Aegean, Marmara and Mediterranean region, in recent years, its cultivation in Antalya Province has increased. Antalya is suitable for growing artichokes with its climatic conditions, and at the same time, these climatic conditions are very favorable for the pests. In this context, during the 2015-2016 artichoke production season, six different locations (Muratpaşa, Kepez, Aksu, Serik, Kumluca and Gazipaşa) in Antalya Province were surveyed at 2 to 4 week periods throughout the vegetation. Lepidopteran larvae, which accounted for 60-70% of the damage, was detected in the fields observed. It was determined that Lepidoptera strain cultured in the laboratory was *Vanessa cardui* (Linnaeus, 1758) (Lepidoptera: Nymphalidae). It was also observed that the larvae feeding artfully on artichoke leaves damaged the plants by knitting white fibrous-tent-looking nests. The pest, *Vanessa cardui*, also known as thorn butterflies, exists in Turkey and is encountered throughout the summer and particularly in temperate winter season in Antalya. The pest has already been known to feed on wild thorns under ecological conditions of Antalya. However, this study revealed a new record of *Vanessa cardui* feeding and causing damage to artichoke plants in artichoke growing areas of the West Mediterranean Region of Turkey.

Keywords: *Cynara scolymus*, artichoke, *Vanessa cardui*, painted lady, West Mediterranean Region



Trend Analyses of Standardized Precipitation Index in Konya Endorheic Basin, Turkey

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Abstract

Studies that related to desertification become popular among natural scientists in Turkey. One of the most important factors for determination of the desertification is Standardized Precipitation Index (SPI). There are 5 different calculations in order to detect different type of drought which are 1, 3, 6, 9 and 12-24 month periods. Since 3-months SPI application is referenced for meteorological types of drought, we applied 3-months SPI to rainfall data. In this study, we consider non parametric trend technique Mann Kendall (MK) to detect seasonal periods across Konya Endorheic Basin. Based on the amount of rainfall data which is collected from 12 out of 51 stations for the time periods in the range of 39–52 years, SPI is calculated and MK is applied to the SPI data. The changes in the trend of SPI for each station are highlighted. The comments are made based on the trend of SPI of Konya Endorheic Basin.

Keywords: Standardized Precipitation Index, Desertification, Rainfall, Konya, Mann Kendall

Aminoglycoside Resistance in Enterococci

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Abstract

Enterococci are lactic acid bacteria (LAB), isolated from human and animal digestive tract and in addition from environmental sources. They contribute the formation of the typical taste, aroma and extend the shelf life of traditional fermented foods such as cheeses and sausages due to various metabolic activities. Despite these features, they pose serious risk factors for human health due to increasing antibiotic resistance. Enterococci exhibit a variety of mechanisms for intrinsic and acquired resistance to major classes of clinically important antibiotics. Aminoglycosides derived from antimicrobial substances produced by the soil dwelling bacterial species in 1940s. Aminoglycosides are protein synthesis inhibitors that function by binding to the ribosome. They act by binding to the 16S rRNA of the 30S ribosomal subunit and interfering with protein synthesis. The first description of high level antibiotic resistance in enterococci determined with streptomycin which is an aminoglycoside. Enterococci have three different resistance mechanisms to aminoglycosides. All enterococci have moderate intrinsic aminoglycoside resistance (MIC, 62-500 µg/mL) due to low cellular permeability. This type of aminoglycoside resistance can be solved addition of penicilin. Acquired aminoglycoside resistance is frequently encoded by genes located on transferrable plasmids. Second resistance mechanism is 16S rRNA modification by rRNA methyltransferase. Another resistance mechanisms are precise mutations, effect a protein of the 30S ribosomal subunit that cause high level aminoglycoside resistance. High level of resistance (MIC, 2000 µg/mL) mediated by production of enzymes to inactivate antibiotic molecules. High level resistance to aminoglycosides is most often associated with the resistance genes that encode aminoglycoside modifying enzymes are *aac(6')-Ie-aph(2'')*-Ia, *aph(2'')*-Ib, *aph(2'')*-Ic, *aph(2'')*-Id, *aph(3')-IIIa*, *aac(6')-Ii*, *ant(3'')*-Ia, *ant(4')-Ia*, *ant(6')-Ia*. In this review aminoglycoside resistance mechanisms of enterococci are summarized and intended to give information about new aminoglycoside resistance genes.

Keywords: Enterococci, aminoglycoside resistance, aminoglycoside modifying enzymes



Eriophyoid Acars (Acarina: Eriophyoidea) on Poaceae in Van Lake Basin

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Abstract

The main goal of this work is to determine Eriophyid (Acarina: Eriophyidae) mites fauna on Poaceae of Van Lake Basin (Erciş, Adilcevaz, Muradiye, Gevaş, Tatvan, Van) during 2014–2016 years. As a result, *Abacarus hystrix* (Nalepa) on *Elymus hispidus* (Opiz.), *Aceria tosichella* Keifer on *Bromus arvensis* L., *Agropyron cristatum* (L.), *Abacarus longilobus* (Skoracka) on *Dactylis glomerata* L. were determined.

Keywords: Acarina, Eriophyoidea, Poaceae, Van Lake Basin

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Temperature Dependency of Sweet Cherry Concentrate Colour: A Kinetic Study

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Abstract

The present study was undertaken to study degradation kinetics of visual colour of sweet cherry concentrate over temperature range of 60-80 °C during 480 minutes heat treatment. The visual colour was evaluated using a HunterLab Colourflex Colourimeter and change in visual color was expressed in terms of total colour difference (TCD^*) which is a combination of L^* (lightness), a^* (redness/greenness) and b^* (yellowness/blueness). TCD^* was fitted to zero-order, first-order and combined kinetics model by non-linear regression iterative procedure. Correlation coefficients (R^2) ranging between 0.9040-0.9763 for zero order kinetics, 0.8232-0.9520 for first order kinetics and 0.9765-0.9898 for combined kinetics, respectively. It could be concluded that change in sweet cherry color during heating at 60, 70, 80 °C for 480 minutes can be described by either first, zero and combined kinetics, but rather better to describe with combined kinetics. Furthermore, it might be inferred that as the temperature increased, change in TCD^* could be predominantly caused by Maillard reaction rather than pigment destruction in sweet cherry concentrates.

Keywords: Colour, Concentrate, Kinetics, Sweet cherry, Thermal Degradation

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UV Spectrum Determinations of Fish Lipids Treated With Grapefruit Peel

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Abstract

Citrus fruits constitute an important source of raw materials for the fruit processing industry. Grapefruit is consumed directly as mourning fruit and a little amount is evaluated by canning. Most of the peel is regarded as waste. However, these natural sources can be utilized as antioxidants to inhibit fish lipids which are prone to oxidation. It was aimed to inhibit lipid oxidation by grapefruit peel albedo and flavedo fragments. The ethanol extracts of the peels were added into fish lipids in the concentrations of 0, 1.0 and 5.0 mg/g and UV spectrum alterations were determined during storage at 25°C for 30 days. The ethanol extracts of flavedo and albedo fragments of grape fruit peel had antioxidant activity 0.006 ± 0.000 μ M trolox and 0.125 ± 0.010 μ M trolox, respectively. Total phenolic content of flavedo fragment was 2.45 ± 0.02 g GAE/100g, whereas albedo fragment was 4.86 ± 0.01 g GAE/100g. UV spectrum of the lipids were recorded between 220 nm and 320 nm. The spectrums of all samples significantly ($p < 0.01$) increased with the storage time. The highest conjugated dienes (232 nm) and conjugated trienes (270 nm) were recorded for control samples and the samples treated with 1.0 mg/g albedo extract, whereas the lowest scores were found for 5mg/g albedo fragments. The extract concentrations of 5mg/g had better scores for hindering lipid oxidation. Choosing the correct extract with optimum concentration in the utilization of herbs, fruits etc. as antioxidant is important for food industry.

Keywords: UV spectrum, Oxidation, Grapefruit peel, Fish oil

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Protective Effects of Bergamot Peel Extracts on Fish Lipid

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Abstract

Bergamot (*Citrus bergamia*) is a natural hybrid fruit derived from sour orange and lemon. In addition it is generally used for preparing jam and marmalade after separation of peels and seeds, which represent 50–65% of the total weight of the fruit. Since the rest of the peel is regarded as waste, it is important to evaluate the waste part of bergamot as natural antioxidant sources. The aim of this research was to determine the oxidative stability of fish oil by adding bergamot peel flavedo and albedo extracts. The albedo (BA) and flavedo (BF) fragments of the fresh bergamot were extracted in ethanol:water solution assisted with ultrasonic treatment. BA and BF extracts were added into the fish lipid in the proportion of 1000 and 2000 ppm and named as BA1, BA2, BF1 and BF2. The sample without extract was regarded as control. All samples were stored at 25°C for 5 weeks. Antioxidant activity of BA and BF fragments were found as 0,136 and 0,049 µM Trolox/g extract, respectively, by following 1,31 and 0,87 g GAE/100 g total phenolic compound, respectively. Oxidation level rapidly increased in control sample compared with the treatment groups. During the storage period the lowest para-anisidine (pa) and peroxide values (pV) were determined in BA2 and BF2 groups. Additionally, this values were reported as 4.66, 5.31 (pa) and 18.89, 19.23 meq O₂/kg (pV), for BA2 and BF2 samples, respectively, at the end of the storage. While thiobarbituric acid reactive substances (TBARS) levels were observed as 3.35 and 3.46 MDA/kg in BA2 and BF2 samples, respectively, this value remained lower in BF2 group et the end of the storage. The result of this study showed that extracts of albedo and flavedo fragments of bergamot had much more suppressing effect on lipid oxidation in fish oil compared with control.

Keywords: Fish oil, Antioxidant, Citrus, Oxidation

The Scientific Research Projects Administration Unit of Akdeniz University (Project number 2011.01.0111.002) supported this research

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Determination of Poultry Meat Consumption Habits and Brand Preferences of Consumers Living in The Province of Osmaniye

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Abstract

In this study, poultry meat consumption habits and poultry meat consumption preferences (especially consumption of chicken, turkey, game meat, partridge, quail, etc.) of consumers have been examined. Poultry meat is a meat product of which protein value is high and fat content is low in respect to its chemical composition, and also which is rich in minerals and vitamins containing important fatty acids (oleic, linoleic, etc.). As the poultry meat is easy digestible, low priced and low calorie compared to the red meat, it increased the demand for the poultry meat, especially the chicken meat. In order to examine this increase in the consumer demand, a survey study has been performed with 500 participants by means of face-to-face interviews, including various occupational groups living in Osmaniye provinces and districts. With the help of the obtained data, poultry meat consumption preferences of the consumers and the effective factors in consumption have been examined. The SPSS.20 package program has been used in the statistical evaluation of the data. Relations between certain socio-economic and demographic characteristics of consumers and poultry meat consumptions have been analyzed by Chi-square (X^2) test and descriptive test statistics. According to the survey results, chicken meat (92%) was consumed more than other poultry products. It has been determined that the individuals consumed the chicken meat mostly as grilled (45%). A significant relationship has been determined between the income groups and the consumption of poultry meat as grilled ($p < 0.05$). However, it has been determined that the households attached importance to the brand in consumption of chicken meat and the most important factor in brand preference was the trust factor.

Keywords: Poultry Meat, Consumption Preference, Brand Preference, Chi-Square (x^2) Test, Osmaniye

The Determination of The Effect of Aluminum And Humic Acid on Common Bean (*Phaseolus Vulgaris* L.) Seedlings Grown in Deep Water Culture

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Abstract

Aluminum is one of the most studied elements on plant growth and development. Al toxicity is effective factor in acidic soil but this effect is not too clear in deep water cultures. Deep water culture is one of growth medium known as “hydroponics” that is plant growth media without soil, and it has been used for experimental and agricultural researches. In this study, the common bean (*Phaseolus vulgaris* L.) which is important crop seedling were put in deep water cultures as 5 treatments each one has 9 replicates namely controls (C), 50mM AlCl₃ (Al 1), 100 mM AlCl₃ (Al 2) and those of humic acid (10ml/L) added samples were determined as (Al 1H) and (Al 2H). The results obtained from growth parameters including root, stem and leaves showed that humic acid treatments recovered the inhibition effect of aluminum significantly seedlings grown in Al 1H. Although hardly seen negative effect on primary root elongation, Al caused lateral root formation additionally. In the leaves of bean, the total, Chlorophyll A and chlorophyll B decreased after Al treatments, however all of the chlorophyll ratios were significantly increased in the leaves of the seedlings treated with Al H1.

Keywords: aluminum, humic acid, common bean, deep water culture

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Digestibility Profile and Pasting Properties of Different RS Sources

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Abstract

Resistant starch (RS) is defined as the fraction of starch that escapes digestion in the small intestine and may be fermented in the colon. RS presents an exciting new potential as a food ingredient, since it is thermally stable and survives most food processes. Due to its similar physiological properties, it is generally considered as a constituent of dietary fiber. RS is classified into four groups. RS is classified into four groups: physically inaccessible starch (RS1), native granular starch (RS2), retrograded starch (RS3), and chemically modified starch (RS4). RS1 and RS2 are slowly but completely digested with appropriate pre-processing of foods, but RS3 and RS4 totally resist digestion. The aim of this study was to investigate the digestibility profile and pasting properties of different RS sources. For this purpose, corn starch, Hylon VII, Novelose and Fibersym were used as RS₁, RS₂, RS₃ and RS₄ respectively. Estimated *in-vitro* glycemic index value, total dietary fiber and RS contents of the samples were determined. Pasting properties of the samples were also determined using RapidVisco Analyser (RVA). Corn starches had the highest estimated *in-vitro* glycemic index value among the samples, while Hylon VII had the lowest. Significant differences were also observed between the pasting properties of the samples.

Keywords: Resistant starch (RS), RS Sources



Enzyme Inhibitory Activity of Ethyl Acetate Extract From *Potentilla Recta*

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Abstract

The genus *Potentilla* is represented by 53 species in Turkey. In the present work, the ethyl acetate extract from *P. recta* was assessed for enzyme inhibitory activity (AChE, BChE, α -amylase, α -glucosidase and tyrosinase) *in vitro*. The ethyl acetate extract demonstrated inhibitory activity against all enzymes. The ethyl acetate extract was found 4.26 and 6.18 mgGALAE/g for AChE and BChE inhibitory activity. The values of α -amylase and α -glucosidase inhibitory activity were found 1.61 mmolACE/g and 8.49 mmolACE/g, respectively. In tyrosinase inhibitory activity, the ethyl acetate extract had the inhibitory activity with the values of 117.78 mmolKAE/g. *P. recta* could be valuable natural source in pharmaceutical applications.

Keywords: *P. recta*, enzyme inhibitory activity.

Antioxidant Activity of Ethyl Acetate Extract from *Potentilla Recta*

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Abstract

P. recta has several properties such as cleansing, antipyretic, and astringent. In this study, ethyl acetate extract of *P. recta* were studied for antioxidant activity and phytochemical content. Antioxidant activity was evaluated with the use several assays. Phytochemical profile was assessed as total phenolic, flavonoid, triterpenoid, and saponin content. Total phenolic content was determined as 28.50 mgGAE/g. Total flavonoid content was found as 28.20 mgRE/g. The free radical scavenging activity of extract was evaluated by using DPPH and ABTS assays. The values of reducing power activity were 58.17 mgTE/g and 95.81 mgTE/g for FRAP and CUPRAC, respectively. Metal chelating activity was 23.01 mgEDTA/g and total antioxidant activity (phosphomolybdenum assay) 2.07 mmolTE/g. *P. recta* could be a potential natural source of antioxidant.

Keywords: *P. recta*, antioxidant, phenolic content

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15-17 May 2017

Antioxidant Properties of Methanol Extract from *Potentilla Recta*

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Abstract

Potentilla recta has been used to treat different diseases like microbial infections in Turkey. In this study, methanolic extract of *P. recta* were studied for antioxidant activity as well as for phytochemical content. Antioxidant activity was evaluated with the use several assays. Phytochemical profile was assessed as total phenolic, flavonoid, triterpenoid, and saponin content. Total phenolic content was determined as 93.00 mgGAE/g. Total triterpenoid content was found as 2.99 mgOE/g. The free radical scavenging activity of extract was evaluated by using DPPH (327.65 mgTE/g) and ABTS (2.84 mmolTE/g) assays. The values of reducing power activity were 175.60 mgTE/g and 226.91 mgTE/g for FRAP and CUPRAC, respectively. Metal chelating activity was 33.61 mgEDTA/g and total antioxidant activity (phosphomolybdenum assay) 3.51 mmolTE/g. *P. recta* could be a potential natural source of antioxidant.

Keywords: *P. recta*, antioxidant, phytochemical profile.

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Enzyme Inhibitory Activity of Water Extract from *Potentilla Recta*

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Abstract

Potentilla species possesses some pharmacological properties such as anti-diabetic. In the present study, the water extract from *P. recta* was assessed for enzyme inhibitory activity *in vitro*. The enzyme inhibitory activity of water extract against cholinesterase's (AChE and BChE), α -amylase, α -glucosidase and tyrosinase were tested. The water extract demonstrated inhibitory activity against AChE (0.76 mgGALAE/g) and no activity against BChE. The values of α -amylase and α -glucosidase inhibitory activity were found 0.58 mmolACE/g and 50.61 mmolACE/g, respectively. The tyrosinase inhibitory activity was 38.92 mgKAE/g. *P. recta* could be valuable natural source in pharmaceutical applications.

Keywords: *P. recta*, enzyme inhibitory activity.

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— Cappadocia/Turkey —

15-17 May 2017

Enzyme Inhibitory Activity of Ethyl Acetate Extract from *Potentilla Reptans*

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Abstract

Potentilla species have several medicinal properties including diabetes mellitus, cancer, gastric problems. Enzyme inhibitory activity were tested against cholinesterase (AChE and BChE), tyrosinase, α -amylase, and α -glucosidase. The ethyl acetate extract showed inhibitory activity against AChE (3.99 mgGALAE/g) and BChE (6.15 mgGALAE/g). The anti-diabetic activity of *P. reptans* was screened using α -amylase, and α -glucosidase inhibition assays. Ethyl acetate extract demonstrated significant inhibitor of α -amylase and α -glucosidase with 1.99 and 4.94 mmolACE/g, respectively. Tyrosinase inhibitory activity was found 108.56 mgKAE/g. *P. reptans* could be considered as promising sources for pharmaceutical industries.

Keywords: *P. reptans*, enzyme inhibitory activity.

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Enzyme Inhibitory Activity of Methanol Extract from *Potentilla Reptans*

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Abstract

Potentilla reptans is traditionally used for treating tooth ache, ulcers, inflammations of the throat. Enzyme inhibitory activity were tested against cholinesterase (AChE and BChE), tyrosinase, α -amylase, and α -glucosidase. The methanol extract showed inhibitory activity against AChE (3.56 mgGALAE/g) and BChE (0.09 mgGALAE/g). The anti-diabetic activity of *P. reptans* was screened using α -amylase, and α -glucosidase inhibition assays. Methanol extract (54.19 mmolACE/g) exhibited remarkable α -glucosidase inhibitory activity. α -amylase inhibitory activity of *P. reptans* was found 1.29 mmolACE/g. The methanol extract were found to be potent inhibitors of tyrosinase with values of 123.36 mgKAE/g. *P. reptans* could be considered as promising sources for pharmaceutical industries.

Keywords: *P. reptans*, enzyme inhibitory activity.

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Enzyme Inhibitory Activity of Water Extract from *Potentilla Reptans*

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Abstract

The genus *Potentilla* belongs to the Rosaceae family and is represented by approximately 500 species around the world. Enzyme inhibitory activity were tested against AChE, BChE, tyrosinase, α -amylase, and α -glucosidase. The water extract showed inhibitory activity against AChE (1.30 mgGALAE/g) and BChE (0.52 mgGALAE/g). The anti-diabetic activity of *P. reptans* was screened using α -amylase, and α -glucosidase inhibition assays. The water extract (40.99 mmolACE/g) exhibited remarkable α -glucosidase inhibitory activity. The water extract of *P. reptans* showed lowest BChE (0.52 mgGALAE/g) and α -amylase (0.36 mgGALAE/g) inhibitory activity. The water extract displayed activity against tyrosinase enzyme (31.48 mgKAE/g). *P. reptans* could be considered as promising sources for pharmaceutical industries.

Keywords: *P. reptans*, enzyme inhibitory activity.

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15-17 May 2017

Antioxidant Capacity of Methanol Extract From Roots of *Asphodeline Brevicaulis* Subsp. *Brevicaulis* Var. *Brevicaulis*

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Abstract

Antioxidant capacities of methanol extract from *Asphodeline breviscaulis* subsp. *brevicaulis* var. *brevicaulis* were investigated with spectrophotometric methods. Antioxidant capacity were evaluated using different assay including free radical scavenging (DPPH and ABTS), reducing power (FRAP and CUPRAC), phosphomolybdenum, and metal chelating. Total phenolic and flavonoid contents were also determined. Generally, the methanol extract possess higher antioxidant effects with higher levels of bioactive compounds. These findings suggest that the *Asphodeline breviscaulis* subsp. *brevicaulis* var. *brevicaulis* root could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry.

Keywords: *Asphodeline*, antioxidant properties, natural products.

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15-17 May 2017

Antioxidant Effects of Different Solvent Extracts from *Ebenus Hirsuta*

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Abstract

Antioxidant capacities of ethyl acetate, and water extracts from *Ebenus hirsuta* (Fabaceae) were investigated with spectrophotometric methods. Antioxidant capacity were evaluated using different assay including free radical scavenging (DPPH and ABTS), reducing power (FRAP and CUPRAC), phosphomolybdenum, and metal chelating. Total phenolic and flavonoid contents were also determined. Generally, *E. hirsuta* water extract possess higher antioxidant effects compared to ethyl acetate extract. These findings suggest that the *Ebenus hirsuta* could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry.

Keywords: *Ebenus hirsuta*, antioxidant properties, natural products.

Acknowledgements: This work was supported by The Scientific and Technological Research Council of Turkey (TUBITAK), Turkey, Project No: 113Z892.

Determination of Some Characteristics Related to Yield Components of Advanced Breeding Chickpea Lines And Varieties in Konya Ecological Conditions

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Abstract

The aim of this study was to determine yield and yield components of some breeding chickpea lines in Konya ecological conditions. Total, 20 line with 4 varieties were included as research materials. The experiments were carried out according to Randomized Complete Block Design with 4 replications in experimental field of Bahri Dağdaş International Agricultural Research Institute in 2016. The periods of blooming and ripening, first pod height, plant height, grain yield, and pod number were analyzed within the study. For all components excluding differences among the genotypes were determined as statically important ($p < 0.01$). As a result of study, shortest vegetation period was recorded for BD 66-65 LİNES (85 days) while longest blooming period was recorded for BD 27-68 and BD 4-2 (in 2011) genotypes with 40.33 days. The first podheight values of BD 27-68 lines (21.06 cm) and plant height (33.46 cm) values of BD 7-69 lines were found over than other genotypes in 2011 cultivations. The highest pod number was determined from BD 7-69 with 30.4, the highest grain yield was determined from genotype of BD 22-43 with 50.86 kg/da. In addition, positive correlations (at 1% error level) were detected between blooming days number and maturing days number ($r = 0,859^{**}$); first pod height and vegetation period ($r = 0,546^{**}$); and first pod height and plant height ($r = 0,553^{**}$).

Keywords: Chickpea, breeding, grain yield, yield components

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15-17 May 2017

Cloud-Based Early Warning System Design for Greenhouse Environmental Conditions

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Abstract

One of the most critical parameters of agricultural production is environmental conditions. Monitoring environmental conditions has vital importance for various agricultural structures and production systems such as greenhouses. However, due to high cost and insufficient technical knowledge, most data monitoring systems can not be used efficiently. In this study, a low-cost, flexible and scalable cloud-based messaging system was developed for early warning of greenhouse climate parameters. For this purpose, temperature and relative humidity are measured by wireless sensors node and sent to a data server over Internet. The measured data was compared to the rules defined in the server. If the minimum or maximum values are exceeded, a cloud message is sent to the mobile phone using the Google Firebase Cloud Message infrastructure. The results show that this designed system can be used in small agricultural enterprises as data collection, decision support and early warning systems. In the future, the system can be used more effectively by adding more climate parameters such as leaf temperature, carbon dioxide ratio, etc.

Keywords: Decision support, Early warning, Greenhouses, Cloud message system

Influence of Sunflower Oil Addition on Water Vapor Permeability of Whey Protein Isolate Based Edible Films

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Abstract

Edible composite films were prepared by dispersing three different ratios of sunflower oil in whey protein isolate based medium and plasticized with glycerol. It was known that protein based edible films have hydrophilic nature therefore they do not provide good barriers to water conversely to lipid films, but they have high mechanical properties. Hence, sunflower oil was added to improve water barrier properties of protein based films. The effect of lipid addition (as 0.00%, 0.05%, 0.10% and 0.15% of sunflower oil) on water vapor permeability of whey protein isolate based films were investigated. WVP of the films was measured gravimetric method. Permeability consists of a process of solution and diffusion where the vapor dissolves on one side of the film and then diffuses through of the film to the other side. WVP results provided us information about possible mass transfer mechanism and solute and polymer interactions in edible films. In general, the incorporation of lipid materials resulted in the reduction of WVP. It was observed that the incorporation of emulsion droplets in the film increases the distance traveled by water molecules which diffuse through the film, thereby decreasing WVP.

Keywords: whey protein isolate, sunflower oil, composite film, water vapor permeability

Slime Formation, Dnase Activity and Hemolytic Activity of *Pseudomonas* Spp. Isolated from Black Sea Anchovy (*Engraulis Encrasicolus*) and Calf Meat

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Abstract

In this study, a total of 60 samples of black sea anchovy and calf meat (minced) were analyzed for the presence of *Pseudomonas* spp. There were 8 *P. aeruginosa*, 7 *P. fluorescens*, 5 *P. cepacia* and 3 *P. putida* isolates isolated from these samples, which were investigated for slime production, DNase activity and hemolytic activity. DNase agar that was used to investigate for DNase activity revealed DNase activity in 87% of 23 *Pseudomonas* spp. Slime production of *Pseudomonas* spp. that was investigated by using Congo Red Agar method revealed slime production in 43.8% of *Pseudomonas* spp. Blood agar base containing 5% sheep blood that was used to determine hemolytic activity revealed hemolytic activity in 100% of *Pseudomonas* spp. Slime production, DNase activity and hemolytic activity are important virulence factors to identify pathogenic *Pseudomonas* spp.

Keywords: *Pseudomonas*, Slime, DNase, Hemolytic activity



Prevalence, Characterization and Antibiotic Resistance of *Klebsiella* Spp. Isolated From Marine and Freshwater Fish in Turkey

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Abstract

In this study, a total of 120 market fish (60 marine and 60 freshwater) samples were collected in Ankara, Turkey and investigated for the presence of *Klebsiella* spp. They were isolated from 70 (58.3 %) out of the 120 fish samples tested. The overall incidence of *Klebsiella* spp. was 68.3 % in marine fish and 48.3 % in freshwater fish samples. The prevalence of *Klebsiella* spp. varied depending on the location of the samples (gill and intestine) examined. In marine and freshwater fish, the highest incidence of *Klebsiella* spp. were found in gill samples. *K. oxytoca* and *K. pneumoniae* were the most commonly isolated species from marine fish samples. In freshwater fish, *K. ozaenae* and *K. rhinoscleromatis* were the most commonly isolated species. A high proportion of isolates had slime (61.4 %), siderophore (54.3 %), protease (52.9 %) and hemolysin (50 %) production. Lipolytic activity of isolates had much lower incidence (8.6 %). All *Klebsiella* isolates showed resistance to ampicillin and amoxicillin. In contrast all the isolates were susceptible to ertapenem, imipenem, piperacillin/tazobactam and amoxicillin/clavulanic acid. ESBL-producing *Klebsiella* spp. was detected in 25.7 % of the isolates. There is little information concerning hemolysin, siderophore, protease, lipase and slime production by *Klebsiella* spp. from fish samples. Therefore, data on exoenzyme production and antibiotic resistance of *Klebsiella* spp. in different fish species will be helpful to for the fish-eating communities ensuring food safety.

Keywords: antibiotic resistance, ESBL, freshwater fish, hemolysins, *Klebsiella*, lipase, marine fish, protease, slime, siderophore



What is Greywater? Greywater Treatment and Recycling

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Abstract

Greywater is a kind of wastewater generated in households and office buildings from streams without fecal contamination. Sources of greywater are sinks, showers, clothes washing machines, dishes machines and baths (except for toilets). Thus, greywaters have less pollution load and can be more easily treated than domestic and municipal wastewaters. In this study, the treatment alternatives and reuse of greywater were evaluated. As a result, a small treatment plant for greywater was designed in order to provide the irrigation water standard (according to the Water Pollution Control Regulation in Turkey). The designed plant consisted of primary clarifier, trickling filter, final clarifier and ultraviolet disinfection units. These kinds of greywater treatment plants can be used in rural areas where water is not enough. More detail information about design details of the small treatment plant will be given in presentation during the conference.

Keywords: Irrigation, Wastewater.



Determination and Population Fluctuation of Insects In Sweet Corn Fields, Malatya, Turkey

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Abstract

Many species may important and reach high populations in corn fields. It was aimed to determine insect species and population fluctuations of common species in sweet corn field in Battalgazi district of Malatya province during 2016 and will be studied in 2017. Pests on leaves were counted weekly between June and October. As a result, Thripidae, Cicadellidae and Aphididae families were found in sweet corn field. In research, Cicadellidae family was reported as the most abundant pest group. Aphididae population was low level than Thripidae population. The highest population of Cicadellidae and Aphididae were observed on 25 August, (6 numbers of 25 leaves), 19 July (6 numbers of 25 leaves), respectively. The results proved that Thripidae, Cicadellidae and Aphididae families were most important pests on sweet corn. In research, Neuroptera eggs were seen on leaves too. The highest population of Neuroptera was observed on 18 August, (13 numbers of 25 leaves). It was determined that Neuroptera is most abundant predator group.

Keywords: Sweet corn, pests, Thripidae, Cicadellidae, Aphididae

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15-17 May 2017

Pasting Properties of Spelt Flour with Enriched Chestnut Flour

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Abstract

The aim of the current study was to investigate the pasting characteristics of spelt flour:chestnut flour mixtures. The chestnut flour was used as a 10-30% in mixture. Generally, the pasting properties (peak viscosity, trough, breakdown and final viscosity) of samples were decreased with increase of chestnut flour. The peak viscosity of samples were determined to be 1606,5-1527-1271,5 and 1158,5 cP, respectively. Maximum trough was 991 cP in 1th (control) samples while minimum trough was 763 cP in 4th (40% chestnut) sample. The breakdown values of samples were detected 1166,5- 1130-986 and 949,5 cP, respectively. Final viscosity of 1th (control) flour was recorded to be 1921,5 cP while the final viscosity value of flour:chestnut flour mixtures were 1908 and 1802 cP for the level of 90:10 and 70:30, respectively. The current results could be important for the industrial application of these flours in some cereal based products like bread, cakes, cookies etc. Also, the chestnut flour has no gluten thus this flour can be used in gluten-free products.

Keywords: Chestnut flour, spelt flour, pasting properties analysis.



Usage of Biological Wastewater Treatment Sludges in Soil

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Abstract

During the treatment of industrial and municipal wastewaters, large amounts of waste biological sludge are inevitably generated in biological wastewater treatment processes such as activated sludge process, trickling filter, etc. The sludge must be treated prior to final disposal, due to its highly putrescible nature. However, its treatment and final disposal is the major problem in the treatment plants according to the legal regulations. After a suitable and sufficient treatment, the biological treatment sludges can be used as fertilizer or soil conditioner. In this study, the usage alternatives of the biological sludges are evaluated according to the legal regulations.

Keywords: Soil, Wastewater sludge.



A Research on The Methods Used in Determining The Economical Values of Forests

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Abstract

The increase in the welfare of society with evolving technology and industrialization process experienced since the second half of the 20th century, which led to changes in the forest demand especially in the natural resources. In this case before, it has brought other functions forefront of forest used only for wood production. Nowadays, plans and projects are being made for the sustainable use of these resources, taking into account the ecological functions of forests such as recreation, carbon sequestration, hydrological and erosion prevention. The economic values of these plans and the functions for which forests are provided in the projects are calculated by various methods such as hedonic pricing, travel-cost and contingent valuation. In the paper, these methods are summarized and the studies in the literature are examined. In terms of implementation, the methods are shown to be strengths and weaknesses to each other. In addition, the study also developed recommendations for administrative and fiscal adjustments that should be made to ensure that economic values of forests are included in the financial statements.

Keywords: Ecological Benefit, Nonmonetary, Forest Management, Valuation

Fungal diseases occurring on boxwood saplings grown in Marmara and Black Sea regions of Turkey

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Abstract

Boxwood is grown in many nurseries in Turkey, especially for ornamental use and it was a profitable job before the onset of Boxwood blight which caused great damage on this plant in the world. Some boxwood growers abandoned their work because of the disease. For this reason fungal diseases of boxwood were investigated in four state and 8 private nurseries located in western black sea region and Marmara regions of Turkey. Boxwood saplings were examined for disease symptoms of leaf spots, wilting and damping off and samples were collected. Fungal pathogens were determined by using appropriate growth media for isolations. *Alternaria* sp., *Cylindrocladium pseudonaviculatum*, *Fusarium* spp., *Gliocladium roseum*, *Phoma* spp., *Phytophthora nicotianae*, and *Volutella buxi* were isolated from diseased specimens. Pathogenicity of these fungi was tested on detached young shoots of common box (*Buxus sempervirens*) by inoculating the fungi on wounded and intact leaves. Two *C. pseudonaviculatum* isolates obtained from Kent nursery caused 80.66 %; 76.00% and 100%; 100% leaf blight on wounded and intact leaves respectively. Three *Phoma* sp. tested for pathogenicity and only one isolate produced 25% leaf spot on only wounded leaves. *Phytophthora nicotianae*, obtained from one nursery induced 100% mortality on both wounded and intact leaved. *Volutella buxi* produced weak yellowing symptoms only on wounded leaved.

Keywords: Boxwood, dieback, *Cylindrocladium*, *Phytophthora*, *Volutella*

Fungal diseases occurring on boxwood saplings grown in Marmara and Black Sea regions of Turkey

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Abstract

Boxwood is grown in many nurseries in Turkey, especially for ornamental use and it was a profitable job before the onset of Boxwood blight which caused great damage on this plant in the world. Some boxwood growers abandoned their work because of the disease. For this reason fungal diseases of boxwood were investigated in four state and 8 private nurseries located in western black sea region and Marmara regions of Turkey. Boxwood saplings were examined for disease symptoms of leaf spots, wilting and damping off and samples were collected. Fungal pathogens were determined by using appropriate growth media for isolations. *Alternaria* sp., *Cylindrocladium pseudonaviculatum*, *Fusarium* spp., *Gliocladium roseum*, *Phoma* spp., *Phytophthora nicotianae*, and *Volutella buxi* were isolated from diseased specimens. Pathogenicity of these fungi was tested on detached young shoots of common box (*Buxus sempervirens*) by inoculating the fungi on wounded and intact leaves. Two *C. pseudonaviculatum* isolates obtained from Kent nursery caused 80.66 %; 76.00% and 100%; 100% leaf blight on wounded and intact leaves respectively. Three *Phoma* sp. tested for pathogenicity and only one isolate produced 25% leaf spot on only wounded leaves. *Phytophthora nicotianae*, obtained from one nursery induced 100% mortality on both wounded and intact leaved. *Volutella buxi* produced weak yellowing symptoms only on wounded leaved.

Keywords: Boxwood, dieback, *Cylindrocladium*, *Phytophthora*, *Volutella*

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Biological Control of Chestnut Blight (*Cryphonectria parasitica*) in Selected Areas of İzmir Province by Hypovirulent Strains.

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Abstract

In order to establish biological control against chestnut canker caused by *Cryphonectria parasitica*, 165 canker samples were collected from 12 locations in 4 counties in İzmir and the pathogen was isolated from these samples. Out of these samples, 154 virulent canker isolates were obtained, 108 being EU-12 Vc type and 46 being EU-1 Vc type. Hypovirulent strains compatible to the VC types were applied all of the virulent cankers. Fifty one hypovirulent canker were either scraped or cut down by the growers assuming that the applications were not successful. The remaining cankers all produced new calli and showed healing. However these calli formation was not properly evaluated by the growers, because some of the cankers were destroyed by goat moth (*Cossus cossus*). With this study, hypovirulence, in the other words biological control of Chestnut canker, were established at 19 location in İzmir province and hypovirulence will be expected to spread in the area naturally.

Keywords: Chestnut canker, Hypovirulent, Biological control, *Cryphonectria parasitica*



An Evaluation on Reuse of Treated Wastewaters in Agricultural Irrigation

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Abstract

With increasing population and urbanization, water consumption and water need are constantly increasing. Since competition for water is high in many regions in the World, domestic and municipal wastewaters are being utilized for agricultural purposes. However, the lack of legal legislation and safety standards causes significant health risks. In our country, the number of wastewater treatment plants are constantly augmented. While the usage of untreated wastewaters lead to salinisation in soil, the wastewaters treated sufficiently can be utilized in agricultural irrigation. However, the advanced treatment of wastewaters for N and P removal may be expensive. In this study, reuse of treated wastewaters in agricultural purposes was evaluated especially in regions where water is limited.

Keywords: Irrigation, Wastewater.

Pathogenic Roles of Olive (*Olea europaea*) Pollens in Mediterranean area of Turkey

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Abstract

Pollen allergy has a remarkable clinical impact all over world. The pollen from the plants that cause allergic diseases depends on the flora and climatic conditions of the region. Because of its climatic conditions, characterized by mild winters and sunny days with dry summers, the vegetation of the Mediterranean area is different from that other parts of general world. Allergenic-pollen-producing plants typical of the Mediterranean climate are Parietaria, Olive and Cupressaceae. *Olea europaea* (olive) pollen is an important cause of pollinosis as its pollen is considered as one of the most important causes of respiratory allergic disease in the Mediterranean region; especially In Spain, southern Italy, Greece and Turkey where the main pollen season is from April to June. The frequency of olive-induced pollinosis is increasing as a consequence of improved diagnostic procedures and as a result of changes in farming practice. It is of interest that ecoenvironment and crop management are factors able to induce allergological changes, in different varieties or cultivars of olive tree. *Olea europaea* pollinosis is clinically characterized by rhinoconjunctival symptomatology than bronchial asthma. Moreover, polysensitization to olive pollen is more frequent than monosensitization. Interestingly, in wide parts of mediterranean area also in Turkey; children and adults with monosensitization to olive and living in the Naples area are frequently affected by year-long symptoms that usually do not increase during the olive-pollen season.

Keywords: Pollen, Allergy, Olea, Meditermean, Turkey

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Role of Morpho-Physical Plant Factors Imparting Resistance in Cotton Against Sucking Insect Pest

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Abstract

Cotton, known as 'white gold' plays a prominent role in the World economy. Cultivation of cotton under diversified agro climatic situations makes the crop to suffer a lot by different kinds of biotic stress factors (pests, diseases and weeds). One of the major constraints in production of quantity and quality of cotton is pest complex attacking at various stages of cotton. Large area under rainfed situations and extensive replacement of conventional varieties with superior hybrids made the crop easily vulnerable to insect pests. The major reason for the low productivity in cotton is damage caused by insect pests. Common use of chemical control is not only creating health hazards and ecological contamination but also growing the resistance in the insects and disturbing the balance between the forces of destruction (predators, parasitoids and pathogens) and forces of creation (biotic potential of pests) in cotton-ecosystem. Therefore alternate methods are needed to be used to control this problem to control of insect pests it is seriously needed to develop a long lasting strategy and a reasonable approach towards this is the use of resistance varieties. The method of controlling pests based on physical characteristics of plants is safe, economical and environment friendly. Plant traits such as number of gossypol glands, hair density, length of hair, plant height and thickness of leaf lamina play an important role in the sustainable pest management of cotton crop by having positive and negative interactions. There is a need to tap the immense genetic diversity available in national gene banks of countries for identification of resistance sources for utilization in breeding programs.

Keywords: Cotton, Morpho-physical plant factors, Resistance, Sucking insect pest



Screening of Soybean Varieties for Resistant to *Macrophomina phaseolina* (Tassi) Goid in 2014 in Cukurova

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Abstract

Charcoal rot is serious when stress conditions such as excessive heat or drought follow periods of good growth. Charcoal rot, caused by *Macrophomina phaseolina*, significantly reduces yield in second crop soybean more than most other diseases in the Adana, Turkey. There are no commercial genotypes marketed as resistant to charcoal rot. The reaction of soybean varieties to charcoal rot under field conditions in Doğankent, Adana was evaluated to suggest an alternative strategy for evaluation and selection of resistant germplasm. 20 soybean varieties screened for their resistance against *M. phaseolina* in Doğankent, Adana experiments on naturally in 2014. Charcoal rot scores were measured using a 1–5 scale. According to results, It were found that 2 varieties were resistant, 2 varieties were moderately sensitive, 16 varieties were over sensitive. Genetic resistance is the most important strategy for control, since it is a cheap and easy. The idea of developing common soybean cultivars that produce high yields and show resistance to biotic (diseases, insects, weeds) stresses over is attractive to soybean breeders Thus, it is important to establish appropriate criteria for quick and efficient selection of resistant germplasm. Also, the disease is controlled by managing crops to minimise plant stress.

Keywords: *Macrophomina Phaseolina*, Charcoal Rot Infestation, Soybean, Resistance, Screening

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The Effect of Phospholipids on Pastırma Quality and Nutritional Value

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Abstract

Pastırma is a meat product obtained from the meats of buffalo and cattle carcasses that are obtained by using different techniques (curing/salting, drying, pressing, pasting çemen etc.). Pastırma's being chemically rich and nutritious gradually increases its importance in nutrition. Especially as it contains high amount of essential nutrients such as protein, fat, mineral, etc., in its structure, it has a great importance in nutrition. The fat content of pastırma is low and the fats contained in its structure are usually formed as intramuscular fat. The phospholipid content is high in the intramuscular fat of pastırma. Phospholipids are the membrane lipids containing a strong group attached to the two fatty acids of first and second carbon atom of glycerol and attached to the third carbon atom through phosphodiester bonds. Phospholipids contain saturated and unsaturated fatty acids. As pastırma contains long chain unsaturated fatty acids in its structure, it is susceptible to oxidation. Due to this feature, it has important effects on the quality of pastırma. On the other hand, as the intramuscular fats contained in pastırma are more than the phospholipids, they have more positive effects on flavor and aroma. In addition, the essential fatty acids contained in its structure (especially linoleic and linolenic acid) are important for nutrition.

Keywords: Phospholipid, Pastırma, Nutrient and Quality

Bayburt'un Farklı Bölgelerinden Elde Edilen Balların GC-MS Tekniđi İle Deđerlendirilmesi

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Özet

Bu çalışma kapsamında, Bayburt ilinin farklı 12 bölgesinden toplanmış olan bal örnekleri GC-MS (Gaz kromatografisi-kütle spektrometresi) tekniđi kullanılarak deđerlendirilmiştir. Bayburt ili sınırları içerisinde belirlenmiş 12 bölgenin her biri birbirine yakın birkaç köyden oluşmaktadır. Çalışmanın amacı GC-MS tekniđinden yararlanarak bal numunelerine ilişkin aroma bileşenlerinin analizinin yapılması böylece Bayburt iline ait balların karakterize edilmesine yardımcı olabilecek “işaretleyici” aroma bileşenlerinin saptanması ve kayıt altına alınarak literatüre kazandırılmasıdır. Gaz kromatografisi tekniđinin kütle spektrometresi ile kombinasyonu, hassas ve güvenilir sonuçlar ile birlikte kimyasal yapı tayinine imkan tanımaktadır. Kesin sonuçların alınabilmesi amacı ile GC-MS (Shimadzu) cihazıyla entegre olarak kullanılan aroma kütüphanesi ile bal numunelerindeki bulunan aroma bileşenleri eşleştirilmiştir. Genel anlamda ifade etmek gerekirse, bölgeler arasında belirgin farklılıklar tespit etmek mümkün olduğu anlaşılmıştır. 1'den 6'ya kadar olan rakamlarla numaralandırılmış bölgeler için tespit edilen aroma bileşenlerinin sayısı, bölgeler için, 15 ve 21 arasında deđişim gösterirken, 7'den 12'ye kadar olan bölgelerde ise tespit edilen aroma bileşenlerinin sayısı 45 ve 55 arasında deđişim göstermektedir. Dolayısıyla tespit edilen aroma bileşenlerinin sayısı ilk altı bölge ile ikinci altı bölge arasında belirgin farklılık göstermiştir. Elde edilen sonuçlar, Bayburt ili içerisindeki farklı bölgelerin aroma kompozisyonunda belirgin farklılıklar olduğunu göstermiştir. Farklı bölgelere ait GC-MS bulguları Bayburt ili içerisindeki bölgelerin birbirine göre var olan aroma varyasyonu hakkında bilgi vermekle birlikte, tüm bilgilerin birlikte yorumlanması durumunda Bayburt iline ait bal numunelerinin genel aroma profilini temsil eden verilerin elde edilebildiđi ve kayıt alınabildiđi anlaşılmıştır.

Anahtar Kelimeler: Bal, Gaz kromatografisi, GC, GC-MS, aroma profili

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The Effects of in Ovo Pollen Extract Injection into Fertile Broiler Eggs and Fasting Time on Hatchability and Four Day Growth of Broiler Chicks

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Abstract

The aim of this study was to determine the effect of in ovo pollen extract injection into fertile broiler eggs and fasting time (24 and 48 h) on hatchability and four day growth of broiler chicks. A 2X2 factorial design was used in this study, each treatment group included six replicate, and each replicate included six mixed sex (3 male and 3 female) chicks. In this study, 180 fertile eggs divided into two injection group (in ovo pollen extract injection group and no injection as control group). In ovo injections was carried out at 18 d of hatch. Hatchability rates were 88.00% in in ovo pollen extract injected group and 86.67% in control group. After hatch, 144 healthy one d old average 49.54 ± 0.17 g broiler chick (72 in ovo injected and 72 control) was exposed to two fasting time (24 and 48 h). Treatment groups were: C24: Control 24 h fasting, C48: Control 48 h fasting, P24: Pollen extract injection and 24 h fasting, P48: Pollen extract injection and 48 h fasting. The experiment lasted 4 days. At the end of study, growth of P24 and C24 groups was higher than C48 group, but P48 group's growth was not different from P24 and C24 groups. It was found that in ovo pollen extract injection has any negative effect on hatchability and improved growth in the event that chicks exposed to 48 h fasting time after hatch. To conclude, in ovo pollen extract injection into fertile eggs may be used as in ovo nutrient for broiler chicks.

Keywords: pollen, pollen extract, in ovo nutrition, chicks

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Phytoremediation of Ar Contaminated Soils by Radish (*Raphanus sativus*)

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Abstract

Arsenic (As) pollution is seen as a global problem throughout the world. This study was conducted to determine the effects of addition of different chelating agent such as ethylene diamine tetraacetic acid (EDTA), Ethylenediamine-N, N'-disuccinic acid (EDDS), Humic acid (HA) on phytoremediation capacity of radish (*Raphanus sativus* L.) grown arsenic polluted (100 mg kg⁻¹) soil. Application of EDTA (0, 5, 10, 15 mg kg⁻¹), EDDS (0, 5, 10, 15 mg kg⁻¹) and HA (0, 50, 100 and 200 mg kg⁻¹) on arsenic accumulation of tuber and leaf of radish has been growing arsenic polluted soil. Result indicated that, all of the chelating application increased the As availability and plant uptake. The highest As translocation factor (TF) and As bioconcentration (BCF) were found 100, 10, 10 mg kg⁻¹ application doses of for EDTA, EDDS and HA, respectively. Consequently, this study suggests that radish (*Raphanus sativus* L.) plant remove the As from soil, but EDTA, EDDS and HA application increase the efficiency removal of As from contaminated soils

Keywords: Arsenic, EDDS, EDTA, HA, Phytoremediation

Determination of the Nutritive Value of Some Chickpea Varieties Grown in East Mediterranean Agricultural Research Institute Using *in vitro* Gas Production Technique

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Abstract

This study was conducted to determination of nutritive value of Chickpea varieties using *in vitro* gas production technique. As a result of this study, it was found significant variation among eight different Chickpea varieties in terms of chemical composition, gas production rate and metabolizable energy, net lactation energy and digestible organic matter. The crude protein contents of Chickpea varieties ranged from 15.26 to 18.52%. The ether extract contents of Chickpea varieties ranged from 4.14 to 5.33%. Ash content of Chickpea seeds changed from 2.69 to 3.46%. The neutral detergent fiber and acid detergent fiber contents of Chickpea varieties switched from 12.46 to 17.29% and 3.80 to 4.87%, respectively. 24 h total *in vitro* gas production of varieties ranged from 58.67 to 81.66 ml/200 mg DM. The metabolizable energy and digestible organic matter contents of Chickpea varieties ranged from 10.25 to 13.83 MJ/kg DM and 68.69 to 91.64%, respectively. In conclusion, Chickpea can be successfully use for ruminant feeding and also Çağatay and İzmir92 varieties is better than the other studied varieties according to their nutritive values.

Keywords: Chemical Composition, Chickpea Variety, Digestibility, In Vitro Gas Production, Nutritive Value

Applicability of the pipe model theory on scots pine branches infected by european pine mistletoe

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Abstract

The pipe model theory states that tree stems and branches can be considered as a unit pipes supporting a unit amount of photosynthetic organs. The theory accepts that there is a relationship between leaf area (A_L) and the supporting sapwood area (A_S). Empirical observations on the structure of several tree species have supported the theory. However studies have been carried out mostly on the relationship between leaf and sapwood area of trees. It is known that some biotic and abiotic factors affect plant growth and development which may also have an effect on the relationship between leaf and sapwood area. Mistletoe, is a semi-parasitic plant growing on many tree species. It uses water and mineral nutrients from host tree and produces its own food by photosynthesis. But the host tree can not benefit from its production. The objective of this study is to verify the consistency of the pipe model theory, using the European pine mistletoe, *Viscum album ssp. austriacum* (Wiesb.) Vollman infected Scots pine (*Pinus sylvestris L.*) branches. In this regard 98 mistletoe infected and 47 uninfected branches were cut off from different parts of tree crowns of scots pine trees growing on the same site. Allometric measurements were carried out in the field. Oven dry weight of needles and mistletoe leaves, the sapwood area (A_S) of branches, and the leaf area of needles and mistletoe leaves were determined in the laboratory. Correlation and regression analyses were carried out to verify the pipe model theory on mistletoe infected braches and develop regression models. The results of this study can also be an invaluable contribution to modeling the effects of mistletoe on the growth and development of host trees.

Keywords: Pipe model theory, *Viscum album ssp. austriacum*, Scots pine, Sapwood, Leaf area.

Determination of Mixture Homogeneity of Mixed Feeds Produced in Kırşehir

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Abstract

In this study, the homogeneities of mix feeds produced in feed mills operating in Kırşehir were determined. Total five feed mills were used to collect 8 samples each weighing 500 g. Chloride method has been used to determine the homogeneity of the mixture. Coefficient of variation (CV) was evaluated by calculating. If CV is less than 10%, homogeneity of the mixture has been accepted as sufficient. The salt content of calf feeds was between 1.49-1.56 %. With regard to homogeneity, feed mills were the nearly same CV values 8.49-8.93. The salt contents of beef cattle feeds were between 1.79- 2.34 % in feed mills. Before analysis, grinding was applied to samples, the salt contents of feed mills were 1.72-3.20%. The determined homogeneities (CV values) were between 6.07-10.03 %. When grinding was performed, homogeneities (CV values) were between 6.08 - 16.11%. The salt contents of dairy feeds were between 1.48- 2.11 % in feed mills, having less salt content. When grinding was performed, the salt contents of dairy feeds were between 1.48-2.20%. Homogeneities were determined as 8.93-16.99 %. When grinding their samples before analysis, they were 9.36-16.66 %. To conclude, all feeds produced in Kırşehir contained higher rate of salt than what suggested in standards. However, the difference between homogeneities of feed mills can be explained by not only different technological traits of feed mills but also errors in operating them. However, there was no any incidence of animal illness or losses due to high salt contained feeds in Kırşehir.

Keywords: Kırşehir, salt, homogeneity, feed, mill

Some Quality Characteristics of Homemade Isot

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Abstract

Hot pepper is commonly cultivated in many countries, and highly appreciated as condiment for its characteristic flavor, pungency, and color as well as its content of antioxidant compounds. Pepper is consumed as fresh or processed in various forms including paste, pickled or dried. Isot is a kind of dried red pepper. It is generally used as an ingredient in foods to impart them a color and a unique flavor. In the production of homemade isot; the sliced ripe fruit of red peppers are dehydrated by sun drying onto a concrete floor for a few days (2-3 days). Then, semi-dried peppers are slightly brined with a sprinkle and put into polythene bags which thinly spread under the sunlight. Temperature of inside bags is raised and the color of fruits is slowly changed. The bags are periodically turned out and also sometimes the fruits are taken out in the nights. These processes are called terletme (as like sweating). After 6-8 days, the sweating process is ended and then the fruits are again dried by sun. The last process of traditional production of isot is grinding in a mill. In this study, 25 different homemade produced isot samples were analyzed in order to determine the some quality characteristics. The moisture, pH, titratable acidity, antioxidant capacity of isot were 9.64-17.44%, 4.35-4.92, 2.30-4.31 g 100 g⁻¹ citric acid and 14.18-76.04%, respectively. Extractable color (ASTA), red/yellow pigment ratio, browning index, reflected color (L, a, b, C and ho) of isot samples 23.63-99.58, 0.44-1.25, 0.29-0.66, 26.80-32.90, 3.52-7.45, 0.81-9.2, 3.98-10.41 and 27.88-81.20, respectively.

Keywords: Hot pepper, Homemade isot, Quality properties



Using Mixograph Parameters in Selection of Durum Wheat Genotypes

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Abstract

Turkey, which is one of the gene centers of durum wheat, is a very suitable country to cultivate high quality durum wheat in terms of ecology. Many quality parameters are used to determine qualified durum wheat genotypes in breeding programme for selection. Mixograph parameters are very useful and effective for selecting lines. Also mixograph parameters give information about gluten strength and quality in durum wheat. The study was carried out with 11 durum wheat lines and 4 standard varieties (Variety of private sector, Amber (candidate line), Ç-1252 and Eminbey) in randomized block design with three replications under irrigated conditions in Konya-center and Gözlu location in 2015-2016. Some quality traits (thousand kernel weight, protein content, SDS sedimentation, semolina color(b), mixograph development time, peak height, softening (Right Peak Slope), peak width, peak area and total area(energy) were examined. Thousand kernel and hectoliter weight were measured according to AACC 55-10 (Anon. 2000). Durum wheat samples were tempered according to AACC 26-95(%16 humidity to be) and milled by Brabender Jr. According to AACC 26-50. Protein content of the flour was measured using a Leco FP 528 analyzer AOAC 992.23 (Anon., 2009). SDS sedimentation were determined according to AACC 56-70, (Anon. 2000). Color of semolina (Yellowness) values b measured with (Anon. 1996). Mixograph parameters were determined according to AACC 54-40A (Anon., 2000). Quality parameters; thousand kernel weight 30.26-38.45 g, protein content 12.94-14.77 %, SDS sedimentation 13.75-29.75 ml, color(b) 20.45-23.35, mixograph development time 1.55-3.79 dk., peak height 46.47-81.38%, softening 6.46-28.85 dk/%, peak width 2.19-15.13% and total area(energy) 236-407 Nm were determined as. Significant differences were found between varieties in terms of examined traits. Line 14 and Eminbey had the highest value in terms of examined quality parameters. In this study it was determined that the mixographs parameters could be effective in determining of durum wheat quality.

Keywords: Durum wheat, mixograph, quality, selection

Detection of Tospoviruses by Biologic, Serologic and Molecular Methods on Some Vegetables and Ornamental Plants in The Marmara Region

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Abstract

This study was completed in production areas for tomato, lettuce, chrysanthemum, gerbera and gladiolus in the Marmara Region from 2012-2016. Tospoviruses (*Groundnut bud necrosis virus* (GBNV), *Watermelon silver mottle virus* (WSMoV), *Groundnut ringspot virus* (GRSV), *Impatiens necrotic spot virus* (INSV), *Tomato chlorotic spot virus* (TCSV), *Chrysanthemum stem necrosis virus* (CSNV) and *Tomato spotted wilt virus* (TSWV) using serological and molecular methods of diagnosis was determined. As a result of the diagnostic studies mentioned hosts infection of the different virus isolates was selected, inoculated by mechanical inoculation method was confirmed by herbaceous indicators. All of the 1034 collected samples were serologically tested with the DAS-ELISA method. Of 562 samples collected from tomato plants from 2012-2015, 41.10% were found to be infected with TSWV. From 2014-2016 332 lettuce samples and from 2013-2014 140 leaf samples from gladiolus, gerbera and chrysanthemum plants were collected. Infection by the researched *Tospovirus* was not identified in these samples. BST1 isolate caused the formation of symptoms like chlorotic/necrotic stains, mosaic, deformation and shortness in herbaceous indicators *Capsicum annuum* L., *Datura stramonium* L., *Nicotiana tabacum* cv. Samsun and *N. glutinosa* L., BST2 isolate caused symptoms in *Petunia hybrida* L. and BYA4 isolate caused symptoms in *Solanum lycopersicum* L. and *Arachis hypogaea* L. After serologic and biologic testing, 486 plant leaf samples were chosen and analyzed with the Real-time RT-PCR method, 118 samples from tomato plants were identified to be infected with TSWV.

Keywords: *Tospovirus*, plants, DAS-ELISA, Real-time RT-PCR.



***Rhizoctonia* Anastomosis Groups Damaging on Potato and Control of the Disease**

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Abstract

Rhizoctonia solani causes damping off, brown cankers on root and crown regions, deformation and growth cracks on tubers on potato plants. The disease produces 10-15% crop loss and 30% decrease on commercial value. Symptoms caused by *Rhizoctonia* species shows variations depending on anastomosis groups. *R. solani* AG 1, AG 2-1, AG 2-2, AG 3, AG 4, AG 5, AG 8, AG 9 and binucleate AG A, AG F, AG K, AG R, AG U anastomosis groups are known on potato by now and these are only anastomosis groups AG 3, 4, 5, 8, A, F, K, R and U make medium and high level disease. AG 3 group was found as the most widespread and virulent anastomosis group in Turkey. AG 3 occurs at all stages of potato and causes brown sunken canker on root, crowns, and stolons, produces sclerotia on tubers. Tuber infections show variations depending on the resistance of the varieties. Generally, chemical control is made against disease in the way treatment of tubers. Along with this application, effective results were obtained by application of biological control agents such as *Bacillus* spp., *Pseudomonas* spp., *Trichoderma* spp., *Gliocladium* spp., non-pathogen *Rhizoctonia* spp., and *Streptomyces* spp. application of activators and use of resistant varieties.

Keywords: *Rhizoctonia* spp., Anastomosis group, Potato, Control

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Nature Friendly Landscape Applications

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Abstract

Based on climate change, which occurs upon global warming and rising population of the world, water resources get both polluted and consumed. Reasons such as usage of large lawn and the choice of wrong plant species may cause the pressure on water resources to rise. Green areas have a significant effect on urban image. When the design is not accurate on green areas, the plants turn yellow, get withered or even die, especially by the effect of climate change that is felt more in recent years, in regions where Mediterranean climate dominates these images have become more common. New approaches on landscape design which enables opportunities for saving or using the water reasonably are needed to avoid such bad images instead of classical landscape design approaches that require heavy watering.

The purpose of this study is to state possible actions to be taken to gear up the green areas of our country on the base of nature friendly approaches such as xeriscape, energy effective landscape design and rain gardens. With this aim global climate change is dwelled on, the applicability of the nature friendly landscape designs are evaluated within the context of existing open green spaces, parks and recreational areas, playgrounds, sports areas, roads and refuges, house gardens, gardens of public and private foundations, and touristic facilities. Suggestions to spread these applications are offered.

Keywords: Global climate change, Xeriscape, Energy effective landscape design, Rain gardens.

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15-17 May 2017

The Persistence of Tribenuron-methyl in Wheat Planted Field, at Trakya Region of Turkey

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Abstract

The aim of this study is concerning the environmental fate of tribenuron-methyl herbicide in a wheat planted field at Trakya Region of Turkey. Use of herbicides containing these active ingredient is advised in the Marmara region in Turkey for cereal agriculture. The study was conducted in wheat planted fields where this herbicide was used. Over 8 months (November 2015 to June 2016) in each two or three week periods, soil samples were obtained from selected sampling points and herbicide residual amounts were determined by high performance liquid chromatography-mass spectrometry (HPLC-MS). As a result of these studies, persistence of tribenuron-methyl was determined as approximately 1% at the end of May, 2016. The result of the present study showed that tribenuron-methyl is generally adsorbed weakly by soil. pH, organic material, climatic factors and clay content of soil were the main factors for environmental fate of this herbicide. The results of this study demonstrated that tribenuron-methyl amount in the soil might depend on their different chemical structures, soil temperature, precipitation and humidity.

Keywords: Active ingredient, tribenuron-methyl, high performance liquid chromatography-mass spectrometry, herbicide, wheat

Detection of Main Pests and Diseases of Maize in Hatay-Turkey

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Abstract

Maize is an important crop in Turkey, and grown as first and second crop in the East Mediterranean Region of Turkey. This study were conducted to determine main pests and diseases of maize in 2013-2014 in Hatay-Turkey. Many Arthropod species and diseases are known to harmful for maize but corn borers which are Mediterranean corn borer, *Sesamia nonagrioides* and European corn borer, *Ostrinia nubilalis* cause economic damage especially on second crop maize. Apart from these pests many lepidopteran species were found on different phenological stages of maize. Beet armyworm, *Spodoptera exiqua* on seedling stage, Leaf armyworm, *Mythimna* species on whirling stage, *Spodoptera littoralis* and *Helicoverpa armigera* on maturing stage were found as pests of maize. Furthermore, recently discovered spotted stem borer *Chilo partellus* distribution and population dynamics are needed to be studied. Root rots caused by different agents such as *Phytium* spp., *Fusarium* spp., and maize smuth *Ustilago maidis* were identified as fungal diseases. *Barley yellow dwarf virus- PAV* (BYDV-PAV) and *Maize dwarf mosaic virus* (MDMV) were identified as virus diseases by using ELISA. The incidence rates of BYDV-PAV and MDMV were determined as 2/30 and 6/30 in symptomatic maize samples, respectively. There were significant damage by *S. nonagrioides* and *O. nubilalis* in poorly managed fields of second crop maize. Other lepidopteran species had low population densities although their population may reach to injury levels in late sown crops.

Keywords: BYDV, *Chilo partellus*, MDMV, lepidoptera, maize, pests, virus

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15-17 May 2017

Effects of Black Mustard Seed Concentration on the Viability of Yeasts During Fermentation of Hardaliye

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Abstract

With a long history in the Thrace Region, Hardaliye is a fermented non-alcoholic drink produced from grape, mustard seed (1-2%, w/w), sour cherry leaf and chemical preservative. However, alcohol formation, due to yeast activity, is one of the major problems encountered during the fermentation of Hardaliye. To overcome this problem chemical preservatives such as sodium benzoate are generally used in the formulation. However there is an increasing consumer demand for food with no chemical additives. In addition to its contribution to flavor of the product, mustard seeds is also known for its inhibitory effect on yeasts because of allyl isothiocyanates in its composition. In this study, the antifungal effect of mustard seed was evaluated to eliminate use of chemical preservatives in Hardaliye production. Cabernet Sauvignon grapes were used for hardaliye production in the laboratory. During two week fermentation total yeast counts were determined at 1, 4, 7 and 14th days. After one-week, the total yeast counts were increased 4-5 log cfu/ml for all tested mustard seed concentrations. At the end of fermentation, comparing with 7th day, the total yeast counts were decreased 0.57, 1.79 and 1.81 log cfu/mL for 1%, 2% and 3% mustard seed concentration, respectively. The results showed that using mustard seed up to 3% was not enough to inhibit yeast growth. Alcohol ratios were also found to be higher than 0.5% for all samples at the end of fermentation which were beyond the legal limits of non-alcoholic beverages.

Keywords: Hardaliye, mustard seed, antifungal, grape

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15-17 May 2017

Impact of Quinoa on the Quality and Sensorial Properties of Gluten-Free Breads

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Abstract

Quinoa as a pseudocereal has recently begun to draw attention due to its excellent nutritional properties. Due to the high content of bio- and techno functional substances and lack of gluten its usage in gluten free products have been widespread. In this study, the impact of whole quinoa flour (WQF) on gluten free bread (GFB) quality parameters such as; volume, moisture, ash, crust and crumb color and sensory properties were investigated. 53.15% rice flour, 24.53% chickpea flour, 12.32% potato starch and 5.00% corn starch were used to produce control GFB. WQF was added at 0, 5, 10, 20 and 30 % w/w levels in to gluten free flour formula by the displacement with rice flour. Moisture and ash content of GFB were showed significant increase with parallel to increase at the level of WQF especially after 5% addition level this increase attracted more attention. There was no significant difference in the protein ratios of breads. Only a slight increase was observed at the 30% addition level of WQF. High proportions of WOF were resulted in reduced bread volume and crust brightness. The addition of different levels of WQF were not caused any significant changes at sensorial scores of GFB. As a result, it is possible to improve nutritional quality of GFB by using WQF, even it is usage level can be raised over 30% which might be a beneficial for coeliac patients.

Keywords: Quinoa, pseudocereal, gluten, sensory, loaf volume, protein

Characterisation of the Textural and Sensory Properties of Ice Cream Cones

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Abstract

In recent years, consumers have begun to increase their interest in ice cream, as well as in the content and structure of ice cream cones (ICCs). In terms of consumer satisfaction, the textural and sensory characteristics of the ICC are important quality parameters. This research therefore aimed at characterizing the textural and sensory properties of wafer and waffle types ICCs supplied from two different city centers (Aydın and İzmir) of Turkey. Significant differences were determined at the hardness (1303,84-4320,24 g) and fracturability (13,21-28,79 mm) of cones. Hardness of the wafer type cones (1738,12±364,97 g), were found lower than the hardness of waffle types (3026,36±604,34 g). On the other hand their fracturability were detected higher than the fracturability of waffle type cones (23,19±4,34 mm and 20,96±1,75 mm respectively). Significant differences were also observed between cone types and cities in the result of sensory analysis. In terms of color, the wafer type cones of İzmir had the lowest points while waffle type cones of the same city had the highest points. Although the different patterns used in the wafer type cones, the patterns of the waffle-type cones like honeycomb and diamond were preferred most by the panelists. For consumers, the high values of fracturability, chewiness and disintegration in the mouth of ICCs are important parameters. The waffle type cones of İzmir were got higher scores in terms of chewiness and disintegration in the mouth while waffle type cones of Aydın were get higher scores at fracturability. The highest and lowest sweet taste was observed at the waffle type cones of İzmir and Aydın respectively. In general, waffle type cones were found more sweet than the wafer type cones. As a result of instrumental and sensory evaluations; it has been determined that waffle type cones have higher characteristics and are more preferred than wafer type cones. However, for two types of cones, it is determined that there were important differences between both cities and different suppliers. Therefore, standardization in the production of ice cream cone has not been achieved. It has come to the conclusion that further work should be done in order to obtain standard production of ICCs.

Keywords: Wafers, waffle, texture, fracturability, standardization

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

The Effects of Different Chelated Iron Fertilizers on Iron Deficiency Chlorosis in Apple Trees

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Abstract

Apple is one of the fruit types that are sensitive to iron deficiency. Particularly, if the pH and lime concentration in soil is high, iron deficiency occurs. Significant amounts of iron deficiency causes reduction in Quality and Yield. Chelated iron fertilizers are widely used to prevent chlorosis from iron deficiency. However, not every chelated fertilizer is equally effective in every soil condition. In this study, the activities of iron chelated fertilizers Fe-EDTA, Fe-DTPA, Fe-HBED, Fe-EDDHA o-o: 2.2, Fe-EDDHA o-o: 3.5, Fe-EDDHA o-o: 4.8, Fe-EDDHA o-o: 5.25 were investigated in apple trees. Consequently, It has been determined that as long as the ortho-ortho isomer ratios of Fe-EDDHA chelated fertilizers increase, leaf active iron content increases. Fe-EDDHA o-o: 5.25 and Fe-EDDHA o-o: 4.8 were the most effective fertilizers followed by Fe-EDDHA o-o: 3.5, Fe-EDDHA o-o: 2.2, Fe-EDTA, Fe-HBED and Fe-DTPA respectively. In the study, the relation between the active iron contents of the leaves and other elements were also determined.

Keywords: Apple, active iron, chelate and chlorosis.

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Application of Nanotechnology in Food Packaging

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Abstract

Nanotechnology has been widely used in the fields of medicine, physics, chemistry, biology, molecular biology, food and food packaging. This technology is based on the manipulation of the material used at the atomic and molecular scale. Nanomaterial is defined as a natural, incidental or manufactured material containing particles in the size range between 1 nm and 100 nm. It was reported that the total annual quantity of nanomaterials on the global market is at around 11 million tonnes. Application of the nanotechnology into food packaging and food products (especially packaged products) prolongs the shelf life of the product as well as improving its quality. The studies revealed that nanomaterial applied to packaging material improved its mechanical strength and permeability, therefore the packaging material protected the freshness of the product. Benefits of the nanotechnology are promising in the food packaging industry taking account the growing number of people and the estimated food shortage in our developing world. In the scope of this study, the history of the development of nanotechnology is addressed, the structure of nanomaterials and nanocomposite structures developed from these materials are defined, the application of nanotechnology to foods and food packagings are reviewed. In this context, the use of silver, titanium dioxide, zinc oxide, silicon dioxide, MgO nanoparticles, polymer technology, an antimicrobial nanocomposite film and nanosensors was explained. Moreover, the effects of nanotechnology applications on health and the legal regulations in Turkey and EU were discussed.

Keywords: Nanotechnology, nanoparticles, packaging

Sustaining Vetiver grass Handicrafts: An Innovative Focus on Rural Area and Tourism

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Abstract

In Turkey, agriculture has a great economic, cultural and ecological significance for tourism. Agricultural products to be obtained from handicraft products, especially to contribute to cultural tourism and agricultural tourism. The tourism contribution of the sale and exhibition of these products is also important for the development of the region and local people. Vetiver grass (*Vetiveria zizanioides* (Linn.) Nash), is known in the world as a plant of water and soil protection (wind, water and soil erosion, flood, etc.). When the studies are investigate, it is found that espicially the roots, and leaves of the plant are valuable and it facilitates the development of rural development economically. Vertically growing plant roots have been shown to be a miracle plant for handicrafts, perfumery products and a wide range of applications as well as for soil and water protection. It has also increased the living standards of those living in rural areas and directed them to activities related to Vetiver grass. Vetiver grass has been tested for soil erosion in the Eastern Black Sea Region of Turkey (Maçka / Trabzon) and its roots have been shown to show improvement. The aim of this study is to discuss the contribution of rural arts and crafts to the crafts that can be obtained from the roots of the Vetiver grass and encourage the people in the regions and regions that are suitable for the production of vetiver craft products. It also aims to demonstrate the contribution of the products that can be obtained from their roots to marketing and to reduce environmental destruction, to protect agricultural lands from destruction (flooding, soil loss, pollution, etc.) by appropriate methods.

Keywords: Vetiver grass, Agritourism, Handicraft, Rural

Effects of Cover Crops on Some Soil Physical Quality parameters in a Apricot Orchard

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Abstract

Cover crops grown as conservation practice improve soil quality by increasing soil organic matter. The physical properties of soils are largely influenced by organic materials. One of the productivity parameters in crop production is the physical properties of the soil. Organic matter (OM) addition to soils has a greatest effect on organic matter contents of soils. This study was conducted to determine the effect of different cover crops as a source of organic matter on some physical quality parameters of soil. For this purpose, in the apricot orchard with clay loam structure was used *Vicia villosa* Roth., *Vicia pannonica* Crantz, *Vicia pannonica* Crantz and Triticale mixture (70%+30%), *Phacelia tanacetifolia* Benth., *Fagopyrum esculentum* Moench. In addition, the experiment was established a randomized complete block design with four replications including mechanical, herbicide and control plots. Soil samples were taken from 0–20 cm and 20-40 cm depth in each plot. According to the results obtained, the cover crops used in the apricot orchard improved some soil chemical properties such as; bulk density (BD), field capacity (FC) and permanent wilting point (PWP), saturated hydraulic conductivity (Ks), aggregate stability (AS), structural stability index (SSI) and mean weight diameter (MWD). While BD values of soils decreased, FC, PWP, Ks, AS, SSI and MWD values increased according to the control with cover crops applications. The highest correlations among the physical properties obtained for the *Vicia villosa* Roth. were found between OM and Db (-0,911**), OM and SSI (0,833**), OM and Ks (0,989**), Db and Ks (-0.906*), TK and Ks (0.987**). Compared with other applications, the highest increases in the 0-20 cm soil depth were in the application of the *Vicia villosa* Roth., decreasing the BD by 12.35% while increasing the Ks by 248.6%, available water capacity by 13.08% and SSI by 9.33%.

Keywords: Cover crops, Soil physical quality parameters, Kayısı

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Detection of Virus Diseases in Tobacco (*Nicotiana tabacum*) Fields of Hatay-Turkey

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Abstract

Tobacco (*Nicotiana tabacum* L.) was one of the important industrial plants in Hatay province of Turkey. There was no information on the status of plant viruses infecting the tobacco fields in Hatay. During 2015-2016, surveys were carried out and leaf samples were collected from symptomatic plants in the tobacco growing areas in Antakya, Altınözü and Yayladağ districts where were the main tobacco growing areas in Hatay. The most severe mosaics and deformations on leaves or chlorosis were mainly observed on suspected tobacco plants. Aphid infestations on younger parts of plants were also commonly observed in the fields. Samples were tested by DAS-ELISA for presence of main viruses of tobacco plants as *Cucumber mosaic virus* (CMV), *Potato virus Y* (PVY), *Tobacco mosaic virus* (TMV), *Tobacco rattle virus* (TRV), *Tobacco ringspot virus* (TRSV) and *Tomato spotted wilt virus* (TSWV). CMV, PVY, TSWV and mixed CMV and PVY infections were found in symptomatic tobacco samples by the rates of 16/50, 20/50, 4/50 and 2/50, respectively. Mosaics and/or chlorosis with leaf deformations were mainly seen on the CMV-infected plants. Necrosis of midribs or veins and in some cases stem necrosis or typical yellow patterns on leaves were generally observed on tobacco plants affected by PVY or TSWV. Some samples with positive reactions in DAS-ELISA were also inoculated to indicator test plants such as *Chenopodium amaranticolor*, *Nicotiana benthamiana*, *N. glutinosa* and *N. tabacum*. CMV and PVY were successfully transmitted by *Myzus persicae* adults collected from tobacco plants naturally infected with the both viruses in fields, and then transferred on the healthy test plants for 3 days inoculation period. Single CMV, PVY and mixed CMV+PVY infections were found as 5/20, 12/20 and 2/20 in healthy *N. tabacum* test plants inoculated by aphids, respectively. The viruses identified in tobacco fields reduce crop quality and yields as well as they also carry the risk spreading to other host plants by vectors in Hatay is one of the important vegetable production areas in Turkey. To our knowledge, this is the first report of single PVY and TSWV, and mixed CMV+PVY infections in commercial tobacco fields in Hatay province of Turkey.

Keywords: Aphid, CMV, *Myzus persicae*, *Nicotiana tabacum*, PVY, TMV, TRV, TRSV, TSWV, virus

Detection of Main Pests and Diseases of Maize in Hatay-Turkey

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Abstract

Maize is an important crop in Turkey, and grown as first and second crop in the East Mediterranean Region of Turkey. This study were conducted to determine main pests and diseases of maize in 2013-2014 in Hatay-Turkey. Many Arthropod species and diseases are known to harmful for maize but corn borers which are Mediterranean corn borer, *Sesamia nonagrioides* and European corn borer, *Ostrinia nubilalis* cause economic damage especially on second crop maize. Apart from these pests many lepidopteran species were found on different phenological stages of maize. Beet armyworm, *Spodoptera exiqua* on seedling stage, Leaf armyworm, *Mythimna* species on whirling stage, *Spodoptera littoralis* and *Helicoverpa armigera* on maturing stage were found as pests of maize. Furthermore, recently discovered spotted stem borer *Chilo partellus* distribution and population dynamics are needed to be studied. Root rots caused by different agents such as *Phytium* spp., *Fusarium* spp., and maize smuth *Ustilago maidis* were identified as fungal diseases. *Barley yellow dwarf virus- PAV* (BYDV-PAV) and *Maize dwarf mosaic virus* (MDMV) were identified as virus diseases by using ELISA. The incidence rates of BYDV-PAV and MDMV were determined as 2/30 and 6/30 in symptomatic maize samples, respectively. There were significant damage by *S. nonagrioides* and *O. nubilalis* in poorly managed fields of second crop maize. Other lepidopteran species had low population densities although their population may reach to injury levels in late sown crops.

Keywords: BYDV, *Chilo partellus*, MDMV, lepidoptera, maize, pests, virus

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SCIENCES AND TECHNOLOGIES

15-17 May 2017

Phylogenetic Relationships in Terms of mtDNA-CO1 in Commercial and Natural *Bombus Terrestris* Populations in Antalya Region

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Abstract

The aim of this study is to determine the phylogenetic relationships between commercial cultivated *B. terrestris* bee colonies and natural populations, which are used extensively in greenhouses activities in the Antalya region, using SNP haplotypes. For this purpose, worker bee samples were collected as project material from 3 commercial producers, from 3 centers (Aksu, Demre, Kumluca) where intensive greenhouse activities and from 3 natural areas (Termossos, Faselis, Bayatbademler) which are at least 30 km away from the nearest sera area, Total of 34 SNP haplotypes were detected in a total of 237 DNA sequences that amplified in PCR using the *B. Terrestris* mtDNA-CO1 (Cytochrome Oxydase-1) gene-specific primers. Phylogenetic analyzes using these haplotypes have shown that natural populations and commercial populations are clearly separated from each other. However, it has been observed that the commercial populations and the bee populations in the intensive greenhouses regions were genetically close to each other. From these results, it was concluded that the probability of gene flow to natural populations from bee colonies used in the sera was high.

Keywords: SNP, mtDNA, CO1, haplotype, Phylogenetic Relationships, *B.Terrestris*

Occupational Health and Safety in the Field of Entomology

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Abstract

There are between 1 and 2 million pesticide poisonings every year in the world. In addition, 20,000 of agricultural workers die every year from pesticide poisoning. An important part of these poisonings is found in entomological studies. In insecticide poisoning, insecticides enter the body via the oral, respiratory or skin routes. The chemicals entering the body are toxic in different organs. Some measures must be taken to protect against insecticide poisoning. Firstly, the most appropriate time for the harmful effects of the identified pests should be learned, the least harmful insecticide should be selected, the appropriate formulation of the selected insecticide should be available and expiry date of the purchased insecticide has not passed. In addition, care must be taken to ensure that the packaging is original, the insecticide should be prepared at the appropriate dose. During the spraying, special clothes should be worn and removed at the end of the spraying and something should not be eaten and drunk. The insecticide should not be sprayed in the windy days and If the wind is too small to affect spraying, the wind must be taken to the rear. At the end of the spraying, hands and face should be washed with soapy water. Drained containers should be buried deep enough to not be used for other purposes. Besides all this, some insects such as bees (*Aphis mellifera*) poisonous, these toxic insects can cause especially allergic reactions. It could even cause deaths.

Keywords: Occupational health and safety, Entomology, Plant Protection

Some New Faunistic Records of Coleoptera from Elazığ (Turkey)

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Abstract

This study was carried out in 2011-2016 in Elazığ city environs in Turkey. Eight species were collected or reported in the course of this study. These species are as follows: *Acmaeodera chalcithorax* Volkovitsh, 1986, *Acmaeoderella chrysanthemii* (Chevrolat, 1854), *Ptosima undecimmaculata* (Herbst, 1784), *Anthaxia (Cratomerus) eugeniae eugeniae* Ganglbauer, 1885, *Agapanthia kirbyi* (Gyllenhal, 1817) (Cerambycidae), *Omophlus proteus proteus* Kirsch 1869 (Tenebrionidae), *Helophorus syriacus* Kuvert, 1885 (Helophoridae), and *Agabus nebulosus* (Forster, 1771) (Dytiscidae). *A. chalcithorax* is associated with *Astragalus*, *H. syriacus* Kuvert, 1885 and *A. nebulosus* Forster, 1771 were collected near the small river. Apart from *H. syriacus*, all other species were first time recorded in Elazığ. Among these species, *Omophlus proteus proteus* can damage different plants such as cereals and rosehips, while some species of Buprestidae can damage Apricot and other fruit trees if their population will increase in future. Authors would like to thank our colleagues (Mark G. Volkovitsh (Russia) (Buprestidae), Marek PRZEWOŹNY (Poland) (Dytiscidae), Dr. Robert B Angus (England) (Helophoridae) for making to identify.

Keywords: New Regional Record, Coleoptera, Elazığ, Turkey

Using the Multilevel Growth Curve Analysis to Evaluate of Growth Performances of Hair Goat Kids

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Abstract

The growth data taken over time on the same experimental unit are the repeated measures data and can be easily analyzed using multilevel modeling techniques where repeated measures over time nested within experimental unit. The objective of the investigation was to model the covariance structure of the data in order to improve the model by using multilevel modeling technique and to predict the individual growth performance of 99 Hair goat kids from 3 genotypes. As dependent variables used for this aim were monthly live weights of the kids from birth to 7th months of age. It was used as independent variables as type of birth, gender, genotype and dam age being time-independent variables. -2 Log Likelihood (-2LL), Akaike's Information Criteria (AIC) and Bayesian Information Criteria (BIC) was used to identify the best covariance structure between Compound Symmetry (CS) and Unstructured (UN) and to identify the best model explaining the individual growth rate (performance). The results of the study revealed that Hair goats had a significant difference in terms of intercept, linear and quadratic growth and the time and genotype had important effects on individual growth performance.

Keywords: Repeated data, Hair goats, Multilevel modeling, Covariance structure

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Determination of Watershed Land Use Type with Bayesian Network in Semi Arid Region

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Abstract

In recent years, experts are identified that climate change and global warming affects stream flow regime. These changes cause floods and erosion in creeks, streams, rivers etc. Especially in semi-arid watersheds, the structure of the land use type is an important factor in preventing possible disasters. The aim of this study is to determine watershed land use type by using hydro-morphological structure of stream and some physical water quality parameters. To do so, hydro-morphological observations and some physical water quality parameters are collected from 513 different sample points in Acicay watershed. Moreover, the most important 5 different factors that use to identify land use type are considered in this study. These factors are Rosgen stream type, salinity, sinuosity, channel material and stream slope respectively. Furthermore, these observations are analysed with Bayesian networks in order to predict the land use type. Four different scenarios are considered to see the changes in the type of the land use. Channel material is found to be an important parameter because it was effecting the land use in all scenarios. Also, Rosgen stream type was distinguishing parameter on predicting the agricultural land.

Keywords: Hydro-morphology, Watershed, Bayesian Neywork, Land Use Type, Semi Arid

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Trend Analyses of Standardized Precipitation Index in Konya Endorheic Basin, Turkey

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Abstract

Studies that related to desertification become popular among natural scientists in Turkey. One of the most important factors for determination of the desertification is Standardized Precipitation Index (SPI). There are 5 different calculations in order to detect different type of drought which are 1, 3, 6, 9 and 12-24 month periods. Since 3-months SPI application is referenced for meteorological types of drought, we applied 3-months SPI to rainfall data. In this study, we consider non parametric trend technique Mann Kendall (MK) to detect seasonal periods across Konya Endorheic Basin. Based on the amount of rainfall data which is collected from 12 out of 51 stations for the time periods in the range of 39–52 years, SPI is calculated and MK is applied to the SPI data. The changes in the trend of SPI for each station are highlighted. The comments are made based on the trend of SPI of Konya Endorheic Basin.

Keywords: Standardized Precipitation Index, Desertification, Rainfall, Konya, Mann Kendall

Detection and Characterization of two Phytoplasma lineages on Cucumber (*Cucumis sativus* L.) with Same Symptomatology based on Virtual RFLP and Nucleotide Sequence Analysis of 16S rDNA**

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Abstract

Phytoplasma-like symptoms were observed in cucumbers (*Cucumis sativus* L.) in Van province of Turkey. The major symptoms observed were severe dwarfing, witches' broom, rosetting, little leaf, and sterility of plants. Genomic DNA of 8 symptomatic and non-symptomatic plant leaves was isolated for the detection of pathogenic DNA. Of the 8 cucumber leaf samples tested by nested polymerase chain reaction (PCR), the four yielded the expected 1.25-kb DNA fragments when using universal primer pairs R16mF2/R16mR1 and R16F2n/R16R2. Randomly selected two DNA bands were further cloned into a proper plasmid vector. The recombinant plasmid DNA was sequenced bidirectionally. BLAST and virtual restriction fragment length polymorphism (RFLP) analyses of the 16S rDNA sequence revealed the presence of the "*Candidatus* Phytoplasma solani" (similarity coefficient 1.00) (GenBank accession no: KX977570) in one of the severely symptomatic cucumber samples and the "*Candidatus* Phytoplasma trifolii" (similarity coefficient 0.98) (GenBank accession no.: KR080212) in the other. The isolates were designated as Van-trifolii and Van-solani isolates, respectively. No significant differences were observed between the two different phytoplasmas' symptomatology. To the authors' knowledge, this is the first report of '*Ca. P. trifolii*' and '*Ca. P. solani*' in cucumbers in Turkey

Keywords: *Cucumis sativus*, Detection, Characterization, *Candidatus* Phytoplasma solani, *Candidatus* Phytoplasma trifolii

** This study was supported by the grant (Project No: FHD-2016-5205) from Research Fund of Yuzuncu Yil University.

Some Individual Phenolic Compounds of Tea Liqueurs Produced Using Different Tea Concentrations and Extraction Times

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Abstract

Liqueurs are alcoholic beverages derived from distilled spirit that have been flavored some flavors such as fruits, herbs, spices, nuts, chocolate and bottled with added sugar or sweetener. In this study, it was aimed to evaluate the differences of individual phenolic compounds of tea liqueurs produced using different tea concentrations (2,5%, 5%, 7,5%) and extraction times (15 and 30 days). In this respect, gallic acid (GA), epigallocatechin (EGC), epicatechin (EC), epigallocatechin gallate (EGCG), galloatechin gallate (GCG), epicatechin gallate (ECG) and catechin gallate (CG) were identified and quantified of tea liquors samples by using high performance liquid chromatograph (HPLC). GA was the major phenolic compound in the tea liqueurs and it was followed by EGC. The amount of GA and EGC in the samples ranged from 88,61 mg/L to 276,78 mg/L and 65,80 mg/L to 223,48 mg/L, respectively. Increased tea concentration enhanced the amount of GA and ECG. The extension of extraction time didn't cause significantly change in the GA and ECG content of tea liqueurs. There is a similar situation in EC, EGCG, GCG, ECG, CG phenolic compounds, which are determined in lower amounts than GA and EGC.

Keywords: Liqueur, tea, extraction, catechin, phenolic compound

Viruses infecting cress in Samsun, Turkey

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Abstract

Garden cress (*Lepidium sativum L.*) belonging to the family *Brassicaceae* is a crop grown on small plots in Samsun, Turkey. Plants belonging to the family *Brassicaceae* may be infected by various viruses. The study was conducted to investigate the presence of main viral diseases on the cress growing areas of Samsun province. During 2016, the symptomatic and asymptomatic samples were collected from cress fields and tested for *Beet western yellows virus* (BWYV), *Cauliflower mosaic virus* (CaMV), *Cucumber mosaic virus* (CMV), *Tobacco mosaic virus* (TMV), *Tomato spotted wilt virus* (TSWV), *Turnip mosaic virus* (TuMV), and *Turnip yellow mosaic virus* (TYMV) using Double antibody sandwich- Enzyme-linked immunosorbent assay (DAS-ELISA). The results of tests showed that samples were found infected with CaMV (4.6%). However, BWYV, CMV, TMV, TSWV, TuMV, and TYMV were not detected in any samples of cress in current study.

Keywords: *Brassicaceae*, Cress, Viruses, CaMV

Some Compositional Properties of Rosehip (*Rosa canina*) Kernel Oil

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Abstract

In this study, physicochemical properties, fatty acid, tocopherol and sterol compositions of rosehip kernel oil were investigated. Iodine value of the rosehip kernel oil was very high, it was found as 149.8 ± 0.7 g/100 g. Conjugated dien content and *p*-anisidine value of the oil was determined as 0.36 ± 0.00 % and 2.0 ± 0.3 , respectively. Additionally, specific absorbance of the rosehip kernel oil was 4.94 ± 0.06 and 1.24 ± 0.05 at 232 and 270 nm, respectively. Induction period of this oil was 3.46 ± 0.13 h at 110 °C and 20 L/h air flow in Rancimat. The rosehip kernel oil was rich in linoleic acid (54.80 %), followed by linolenic acid (23.47 %), oleic acid (14.79 %), palmitic acid (3.66 %) and stearic acid (2.19 %). α -, γ - and δ - tocopherol content of the oil was determined as 261.2 ± 0.3 , 472.0 ± 0.4 and 53.1 ± 0.7 mg/kg, respectively. The rosehip kernel oil contained 78.0 % β -sitosterol, 4.3 % campesterol, 4.3 % delta-7-stigmastenol, 3.9 % delta-5-avenasterol, and 1.5 % delta-7-avenasterol. Total phenolic content of the oil was 37.97 ± 1.45 mg/kg and total carotenoid content was 218.8 ± 1.9 mg/kg. Total carotenoid and tocopherol content of the rosehip kernel oil was higher than most of the edible oils. Therefore, the rosehip kernel oil can be used as food additive due to its valuable bioactive components.

Keywords: Rosehip kernel oil, fatty acid composition, tocopherols, sterols, carotenoids

Tocopherol degradation of refined hazelnut oil during heating at different temperatures

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Abstract

In this study, the change in tocopherol isomers and induction periods of refined hazelnut oils during heating at 80, 100 and 120 °C was investigated. Heating of the refined hazelnut oil at different temperatures caused degradation of α -tocopherol. Little change in other tocopherol isomers was occurred. The changes in α - and γ -tocopherol level during oxidation at all temperatures were significant ($p < 0.05$), whereas the changes in the β - and δ -tocopherol content were not significant ($p > 0.05$). Degradation of α -tocopherol in the hazelnut oil accelerated as the temperature increased and the heating period was prolonged. 64.2, 82.3 and 82.9 % of α -tocopherol degraded after 312, 276 and 216 hours at 80, 100 and 120 °C whereas, only 7.7, 39.4 and 43.4 % of γ -tocopherol degraded at these conditions. On the other hand, the induction period of the hazelnut oil decreased with increasing heating time. Induction period of the refined hazelnut oil dropped from the beginning average value of 27.37 minutes to 3.28, 1.09 and 3.37 minutes, respectively at the end of 312, 276 and 216 hours at 80, 100 and 120 °C. According to statistical analysis, the correlations between the amount of α -tocopherol and induction period of the refined hazelnut oil were found as 0.922, 0.948 and 0.976, at 80, 100 and 120 °C, respectively. In conclusion, oxidative stability of the refined hazelnut oil is high at high temperatures. Therefore, this oil can be used as in cooking processes.

Keywords: Refined hazelnut oil, tocopherol degradation, induction period, oxidative stability

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Spad Meter Based On Selection in F₂ Durum Wheat Populations Under Different Nitrogen Levels

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Abstract

This study was conducted to evaluate the effectiveness of SPAD-502 chlorophyll meter reading as indirect selection criteria for grain yield under different nitrogen (N) conditions in F₂ durum wheat populations. In this study six durum wheat parents and their 6x6 half-sib F₂ diallel cross populations were grown under N₀ (zero N), N₁ (120 kg ha⁻¹) and N₂ (240 kg ha⁻¹) nitrogen conditions. Chlorophyll content at heading stage was obtained by using SPAD meter (SPAD-502; Minolta, Osaka, Japan). The results showed that the SPAD readings and grain yield of durum wheat increased significantly with increasing nitrogen level. Among genotypes differences were found significant at N₂ level. Significant genotypic variations and general combining ability (GCA) effects were observed for plant grain yield at N₁ conditions. Significant GCA and specific combining ability (SCA) effect for SPAD readings were found at N₂ conditions. The correlation between SPAD at N₀ nitrogen level with grain yield was positive ($R^2 = 0.328$) The results indicate that a high nitrogen condition is the most effective way to detect genotypic differences for SPAD reading among durum wheat genotypes in F₂ progenies.

Keywords: Diallel, durum wheat, nitrogen, SPAD reading

Determination of Hepatoprotective and Antioxidant Roles of *Lactarius deliciosus* Edible Mushroom Species Against CCl₄-Induced Experimental Oxidative Stress in Rats

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Abstract

The aim of this study was the evaluation of the protective effects and antioxidant role of *Lactarius deliciosus* (L.) Gray. (Lac), a mushroom, against carbon tetrachloride (CCl₄)-induced oxidative stress, hepatotoxicity and nephropathy. Four groups were designed as Control, only CCl₄, CCl₄+Lac 15% and only Lac 15 % groups. CCl₄ was received intraperitoneally twice a week as 0.5 ml/kg for 50 days. Dried Lac mushroom was added to daily food as 15 % (w/w) and rats were fed with this food in the same period. Hepatic and renal damage biomarkers such as aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH), creatinine (CRE), urea and lipid profile [triglyceride (TG), cholesterol (CHOL), LDL- cholesterol (LDL-c) and HDL-cholesterol (HDL-c)], antioxidant defence system constituents and malondialdehyde (MDA) parameters were evaluated to observe protective roles and antioxidant activity of feeding of the Lac supplementation against CCl₄-induced oxidative stress and toxicity in the erythrocyte, liver and kidney tissues of rats. The biochemical analysis showed a considerable increase in the serum AST, ALT and LDH enzymes in the groups CCl₄ and CCl₄+Lac 15% as compared to Control group. Lac supplemented diet significantly decreased the devastating effects of CCl₄ according to biochemical parameters. Additionally, Lac supplementation diet significantly restored increased MDA levels in kidney and erythrocyte induced by CCl₄. Increase in GST (Gluthathione S-Transferase) activity was observed in liver, kidney and erythrocyte of CCl₄ induced rats. Lac supplementation diet also restored this enzyme Control group's level. As a conclusion, results indicated that Lac could be as an important as diet-derived antioxidants in preventing oxidative damage in the CCl₄-induced tissues.

Keywords: Carbon tetrachloride, *Lactarius deliciosus*, Biochemical parameters, Protective potential, Antioxidant role.

Measurement of The Amount of Nitrogen and Other Plant Nutrient Elements in Soil Via Laser Induced Breakdown Spectroscopy (Libs) for Fertilization Programs

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Abstract

Knowledge of the composition and a number of plant nutrient elements in soil is crucial to achieving maximum productivity and best quality in agriculture. Fertilization programs are proposed on the basis of the information -, and titration. Meanwhile, loss of nitrogen (N) in the form of ammonia (NH₃) results in false detection nitrogen content of soil. Dumas Method including dry burning has more complicated, time-consuming and exhausting steps. In addition, the need for a laboratory and limited sample size for analysis for one run are other constraints of these methods. Consequently, these methods are not capable of detection the nitrogen content in-situ and rapidly with a high accuracy. We have been working on a hand type equipment detecting not only nitrogen (N) in soil but also phosphorus (P), potassium (K) and carbon (in the form of organic material) immediately and accurately in-situ. The design and the working principle of this hand type equipment are based on Laser Induced Breakdown Spectroscopy (LIBS). LIBS method produces a distinct plasma which is formed by a laser pulse via atomization and excitation of the sample surface. Then a detector collects sample specific spectroscopic information. In this study, a method including the use of hand type LIBS technology is being developed for rapid and more reliable detection of % nitrogen, phosphorus, potassium, and carbon in soil. Thus, this system will be useful to propose adequate fertilization programs to farmers rapidly and accurately without losing time and effort for sample preparation and analysis in laboratory.

Keywords: Soil, nitrogen, plant nutrients, Laser Induced Breakdown Spectroscopy, LIBS, fertilization program.

Using RAPD Markers for Determination of Genetic Diversity of Tomato Lines Tolerant to High Temperature Conditions in Şanlıurfa

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Abstract

Increasing temperatures due to global climate change has necessitated development of some characteristics in agricultural plant varieties. To this end, local gene pools should be established and characterized for using high temperature tolerant vegetable variety development. The aim of this study is to characterize genetic diversity and phylogenetic relationship of tomato (*Solanum lycopersicum*) lines existing in Alata Horticultural Research Station and GAP Agricultural Research Institute; and to search for molecular markers related to high temperature tolerance. High temperature tolerance of 270 tomato lines of tomato gene pool collection in Alata Horticultural Research Station and GAP Agricultural Research Institute was determined via project supported by Turkish Scientific and Technological Research Council-TÜBİTAK. 25 of them were subjected to field trials in Alata and Şanlıurfa conditions. Bearing fruits with seeds in the period of July – August especially in Şanlıurfa, is the indicator of high temperature tolerant tomato lines proving that female and male organs have not been damaged. It was observed that most of the tomato lines whose reproductive organs were not adversely affected are local genotypes of Şanlıurfa or lines developed from them. High variation within the tomato lines will enable to generate hybrids with superior properties. So, tolerant lines used in this study were these new Şanlıurfa local genotypes and the ones that showed promising results in high temperature trials under Şanlıurfa conditions. These lines has been subjected to molecular marker analysis using RADP (random amplified polymorphic dna) method. DNA extracted from leaves via CTAB buffer and phenol chloroform isoamyl alcohol extraction are being screened by 35 RAPD primers. Haplotypes will be constructed from polymorphic RADP markers. This RADP data will be analyzed via Arlequin and Phylip software to find out genetic diversity and phylogenetic relationship of these lines. Finally, RAPD data and high temperature tolerance data will be evaluated together with iXora software to search for RAPD markers related to high temperature tolerance. 270 tomato lines were screened for high temperature tolerance. 25 of them were subjected to field trials in Alata and Şanlıurfa conditions. The tolerant lines are being subjected to molecular marker analysis using RAPD to investigate their genetic diversity and phylogenetic relationship. RAPD and field data will be evaluated together to search for RAPD markers related to high temperature tolerance.

Keywords: Temperature tolerant tomato, RAPD, agricultural biodiversity

Acknowledgements: The authors thank to Turkish Scientific and Technological Research Council-TÜBİTAK (Project no: 109G029), GAP Agriculture Research Institute-GAPTAEM, Alata Research Station and Turkish Ministry of Agriculture and Rural Affairs in Şanlıurfa for their financial supports and supplying seed.

Bacterial Cellulose Production with *Komagataeibacter hansenii*

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Abstract

Cellulose is the most common polymer in the world, formed by β -1,4 linked glucopyranose units. In this study, the cellulose-producing bacteria were isolated from the domestic apple vinegar, identified by 16s rRNA sequence analysis and used to produce bacterial cellulose (BC). The physical, chemical, structural and thermal properties of the produced BC were determined and the results were compared with plant cellulose. HS (Hestrin and Schramm) medium was used for BC production that was carried out at 28-32 °C for 21 days under static conditions. As a result of the 16S rRNA analysis, BC producing bacteria was identified as *Komagataeibacter hansenii*. The moisture, ash, liquid retention capacity of the produced bacterial celluloses were determined. Thermal, structural and morphological properties of bacterial celluloses were determined and the results were compared with each other and plant cellulose. It was found that the structure of BC was similar to the plant cellulose, but the fiber diameter was thinner and the thermal stability was higher than plant cellulose.

Keywords: Acetobacter, Bacterial cellulose, Komagataeibacter, Vinegar

Effect of Previous Legume Crops and Sowing Dates on the Sustainability and Environmentally Friendly Silage Corn Cultivation

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Abstract

This study was conducted in order to determine the effect of different previous crops and sowing dates on the sustainability and environmentally friendly silage corn cultivation under typical Mediterranean climatic conditions, during summer period of 2013 and 2014. The experiment laid out in a split-plot design in the form of randomized complete blocks with three replications, main plots were sowing dates (early spring, mid spring and late spring) and sub plots were previous crops (*Vicia sativa*, *Vicia villosa*, *Lathyrus sativus*, *Trifolium resupinatum* and *Pisum arvense*). The treatments with 0, 100 and 200 kg N ha⁻¹ application were aimed for comparison, zero dose being control. Some silage quality components such as silage loss, color, structure and odor were assessed. Results indicated that, there were no significant differences among sowing dates and N-doses treatments in terms of silage quality. Inorganic fertilizer use can be limited by growing previous legume crops such as *Vicia villosa* and *Vicia sativa*, without losing any silage performance of maize in silage crop production.

Keywords: sowing date, previous legume crop, silage quality, *Zea mays*.

An Approach to Dormancy Breaking Techniques of Crop Seeds

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Abstract

The first and significant stage of crop production is seed sowing, germination and emergence. As it is well known, every seed sown in to the soil may not be germinate. The reason is that “seed dormancy”. Seed dormancy has been defined as the failure of an intact, viable seed to complete germination stage to optimize its germination over time, dormancy also prevent pre-harvest germination. In another sense, seed dormancy namely resting period is the internal or innate inhibition of germination of otherwise normal or viable seed even its germination. There are several types of dormancy caused by tough seed coat, embryo or various inhibitors. In case of dormancy failures, pre-treatments should be done to the seeds prior to sowing. Different techniques of breaking seed dormancy means improving seed germination and consequently the emergence rate and emergence speed of these seeds. This treatment also increases the quality characteristics of the seedling. Techniques to get over dormancy are various scarification methods (mechanical or acid treatment) and hot water application. The other techniques to break dormancy are seed priming, precooling, preheating, hormonal treatment and leaching of inhibitors.

Keywords: seed, dormancy, breaking methods, germination.

Effects of changing conditions of osmotic dehydration on drying kinetics of figs

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Abstract

This study was carried out to investigate the effects of osmotic conditions on drying kinetics of figs. In experiments, Sarılop variety figs (*Ficus carica* L) were used as a whole (unsliced and unpeeled). Osmotic dehydration (OD) was applied to the figs as a pretreatment at different osmotic concentration rates (30, 40 and 50 °Brix), different osmotic temperatures (30, 40 and 50 °C) and different vacuum levels (130 mbar, 512 mbar and atmospheric pressure/no vacuum) in a sucrose solution with a fruit/solution mass ratio of 1/4. Vacuum impregnation was applied in osmotic dehydration for 15 min then the osmotic dehydration was continued at atmospheric pressure for 165 min therefore the total pretreatment lasted for 180 min. Drying process of pretreated and non-pretreated (fresh) figs were performed at 75 °C in a convective oven. Results show that increasing of concentration rate of osmotic solution, temperature of osmotic solution and vacuum pressure in OD process shortened the drying period. Values of effective moisture diffusivity of pretreated and non-pretreated figs were calculated by considering shrinkage effect. It was found that value of effective moisture diffusivity of non-pretreated figs was 5.69×10^{-10} m²/s and values of effective moisture diffusivity of pretreated figs were ranged 6.41×10^{-10} - 10.25×10^{-10} m²/s. Additionally, effective moisture diffusivity of figs increased with increasing of concentration rate of osmotic solution, temperature of osmotic solution and vacuum pressure in OD pretreatment.

Keywords: Fig, osmotic conditions, drying kinetics, effective moisture diffusivity, shrinkage

Acknowledgements: This study was supported within the scope of Pamukkale University Scientific Research Projects 2014FBE032 numbered PhD Thesis Project.

The Use of Natural Products as An Alternative to Chemical Methods in Combat Against Varroa in Honeybee Colonies

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Sibel Alapala Demirhan⁵ Mahmut İSLAMOĞLU⁶

Abstract

This study was conducted in order to determine the effect of natural products on the parasite called Varroa destructor in spring and autumn as an alternative to chemical products in use. In the first group, an extract prepared by mixing the leaves of eucalyptus tree with its bark was applied. In the second group, an extract was prepared by burning orange peel to obtain smoke from it and this smoke was applied to the parasite. In third group propolis, a bee product, was applied. The last group was the control group in which no application took place. Total 40 honeybee colonies were used, ten colonies for each group. According to the implications of the study, it is found that the effectiveness of the applications done in autumn is generally higher than that of spring. It is also witnessed that orange peel application is more efficient than the other two applications. The mixture of eucalyptus bark and leaves follows orange peel in terms of effectiveness.

Keywords: Honeybee, Varroa Parasite, Natural Products

Nutritional Value of Mushrooms and Its Effect on Enrichment of Bread

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Abstract

Most of the diseases that arise today are caused by lack of nutrition and insufficiency. Therefore, consumers have taken nutritional precautions to be able to live a healthier and better life. One of the measures taken is to consume functional foods. Studies on the production of functional bread in order to improve the sensory properties and increase bioavailability of bread are increasing rapidly. Aim of enriching traditional products like bread is to provide the desired flavour and texture and also to increase the nutritional value of the product. Bread is an indispensable food, consumed all over the world, and is mainly made of wheat flour, water, salt and yeast. It is not a good protein source that despite being bread nourishing, satisfying, cheap and energy source. Bread is a product that suitable for enriching by proteins to increase protein intake in daily diets. Protein rich food mixtures can be used for bread enrichment especially those of obtained from vegetable origin foods. Recently, mushrooms have become attractive as functional foods due to their high protein content, unique and subtle flavour, low fat ingredients and cholesterol. As well as its nutritive properties it also has bioactive compounds. The bioactive compounds act as antioxidant, antitumor, anticarcinogenic, antimicrobial agent. In this paper we will explain nutritional value of mushrooms and how to use mushrooms for bread enrichment.

Keywords: bread, mushroom, nutritional value.

Screening of Some Lentil Cultivars for Root Rot Resistance to *Fusarium solani* Under Controlled Condition

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Abstract

The purpose of this study was to determine the reactions of some lentil cultivars against highly virulent isolates TR-LFS-63/37 and TR-LFS-63/195 of *Fusarium solani* (Mart.) Sacc. obtained from diseased lentil plants exhibiting root rot in a survey conducted in the region. For this purpose, red lentil cvs. Çiftçi, Altıntoprak, Seyran-96, Şakar, Yerli Kırmızı, Fırat-87, Kafkas and Çağıl, which is grown extensively in our country, and green lentil cvs. Karagül, Ankara Yeşili, Pul-11, Yusufhan, Ceren, Bozok, Meyveci and Gümrah were tested in pot trials. Reactions of cultivars to root rot were evaluated according to the resistance categories based on disease severity (%) on plant. As a result, cv. Yusufhan had a more disease severity than cv. Ankara Yeşili to both isolates. In resistance categories, cvs. Ankara Yeşili, Ceren, Meyveci, Yerli Kırmızı, Seyran-96, Şakar and Çiftçi were found as low-level resistant (LR) and cvs. Gümrah, Bozok, Karagül, Pul-11, Kafkas, Altıntoprak, and Çağıl as low-level susceptible (LS). Additionally, any cultivar did not take place in high level resistant (HR) and tolerant (T) categories with disease severity ranging between 37.5 to 92.2 %. Resistance of 16 cultivars to isolate TR-LFS-63/37 of *F. solani* was divided statistically into 11 groups. In terms of disease severity (%), cvs. Gümrah, Altıntoprak, Karagül and Kafkas were located statistically in the same group. However, resistance of cultivars to isolate TR-LFS-63/195 of *F. solani* was divided statistically into 8 groups. Cvs. Ankara Yeşili, Ceren, Çiftçi ve Şakar exhibited the lowest disease severity while cv. Yusufhan showed the highest disease severity.

Keywords: *Fusarium solani*, Lentil, Root rot, Resistance

Adhesion Strength and Hardness Values of Some Varnishes Used on Wood Surfaces

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Abstract

This study aims to determine surface hardness, Brinell hardness, and adhesion strength of polyurethane varnish, single and double component water-based varnishes and synthetic varnishes which are widely used for the protection of wooden surfaces in the wood and furniture industry. In accordance with this aim, varnish application was carried out on the surfaces of the samples of sapele (*Entandrophragma cylindricum*) wood according to ASTM D 3023 standards. Surface hardness, Brinell hardness, and adhesion strength of the varnish layer were determined in accordance with ASTM D 4366-95, TS EN 1534, and TS EN ISO 4624 standards respectively. As a result, the highest value for the surface hardness was obtained from polyurethane varnish and while the one component waterborne varnish yielded the lowest value. The highest value of Brinell hardness was found in polyurethane varnish, while the differences between single component water-based, double component water-based, and synthetic varnish were found to be statistically insignificant. The highest adhesion strength value was obtained from polyurethane varnish while the lowest one was observed in single component water-based varnish.

Keywords: Wood, Brinell hardness, Surface hardness, Adhesion strength

The Determination of the Resistance to Abrasion and Scratching of Some Varnishes Applied on Sapele Wood

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Abstract

This study aims to determine the abrasion and scratching resistance of polyurethane, single component water-based, double component water-based and synthetic varnish which were applied to the surfaces of specimens, prepared in respect to the section of radial and tangential of Sapele wood (*Entandrophragma cylindricum*). Bonding abrasion resistance and scratch resistance of the varnish layer were determined in accordance with TS EN 15185 and TS EN 15186 standards respectively. According to the test results, the effects of varnish types on abrasion and scratching resistance are statistically significant while the effects of section direction are found to be insignificant. According to the results of the study, the highest abrasion resistance was obtained in polyurethane varnish (261.3 cycles) while the lowest resistance was found in synthetic varnish (194.3 cycles). The highest scratching resistance was obtained in polyurethane varnish (1.60 N) while the lowest one was found in synthetic varnish (0.90 N). In conclusion, there is no statistical significance between single component water-based varnish and double component water-based varnish in terms of abrasion and scratching resistance.

Keywords: Abrasion resistance, Scratching resistance, Varnish layer, Sapele wood

Continuous No-till Cropping Diversity Improves Soil Quality and Crop Productivity

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Abstract

Cropping diversity with cover crop is expected to act as a biological primer to improve soil health and sustain crop productivity. The impact (1995 to 2014) of continuous corn, corn-soybean and corn-soybean-wheat rotation with and without cover crop on soil quality and crop productivity under continuous no-till, as compared to conventionally-tilled continuous corn, were evaluated. Composite soil samples were collected at 0 to 15 and 15 to 30 cm depths from geo-referenced sites of each replicated plot were analyzed for microbial biomass, basal respiration, metabolic quotients, enzyme activity and earthworms as soil biological quality indicators; total organic C and N, active C and N, C and N management indices (CMI and NMI), and greenhouse gas emissions as soil chemical quality indicators; and particulate organic C and N, bulk density, aggregate size distribution, and macro-aggregate stability as soil physical quality indicators, respectively. Temporal corn, soybean and wheat yield data were collected and normalized as relative crop yields. The soil and crop data were normalized to calculate soil quality based on both inductive and deductive additive approaches. Results showed that low external input system with increasing cropping diversity under continuous no-till had significantly higher soil quality values than that of high external input mono-cropping system. Cropping diversity impact was more pronounced with cover crops due to diverse quantity and quality of residues. Soil biological quality indicators were more sensitive than the soil chemical and physical quality indicators. Improvements in crop yields lag behind improvements in soil quality. Switching to no-till crop rotation, it is essential to use cover crops to improve soil health.

Keywords: No-Till, conventional-till, productivity, soil health

Innovative Food Packaging Technologies Applied in Dairy Products

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Abstract

Active packaging is one of the innovative food packaging concepts that can be applied in packaging of foodstuffs. In active packaging technology the condition of packed food is changed to extend shelf life or to improve safety or sensory properties, while maintaining the quality of the packaged food by means of absorbing or releasing systems incorporated in to the packaging material or integrated to the closure of the bottle, or directly added in to the package in the form of sachets, labels. This technology also presents an opportunity to reduce the direct addition of chemicals in to food, the need for changes in food formulation and for sustainability of packaging materials via application of biodegradable packaging materials. Because the consumer demands increase for natural food, concept of active packaging system plays increasingly important role offering numerous and innovative solutions to meet these consumer demands by application of bioactive substances in to the packaging materials.

Dairy products are very susceptible to microbiological spoilage, enzymatic and non-enzymatic spoilage because of the characteristics and processing conditions of the dairy products. So active packaging technology can find a great application area in packaging of dairy products if this system can be integrated into the dairy industry with cost efficiency. Antimicrobial packaging, oxygen scavengers, antioxidant packaging or the concepts to make the food product more healthier for consumers can be applied to extend the shelf life of dairy products or to maintain the food quality or to produce value added dairy products. In this study, the application techniques of active packaging systems for dairy products are reviewed, and industrial applications were investigated to provide an insight to the people who are interested in with dairy products or packaging technology.

Keywords: Active packaging, Dairy product, Antimicrobial package, Antioxidant package, Oxygen scavenger

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Sensory Analysis: A Tool for Evaluating Quality Foods

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Abstract

Sensory analysis (or sensory evaluation) is a scientific discipline that applies principles of experimental design and statistical analysis to the use of human senses (sight, smell, taste, touch and hearing) for the purposes of evaluating consumer products. Sensory evaluation comprises a set of techniques for accurate measurement of human responses to foods and minimizes the potentially biasing effects of brand identity and other information influences on consumer perception. Sensory analysis is a quantitative science in which numerical data are collected to establish lawful and specific relationships between product characteristics and human perception. The discipline requires panels of human assessors, on whom the products are tested, and recording the responses made by them. Sensory analysis is not new to the food industry on the contrary it has been in existence ever since man started to use his senses to judge the quality and safety of foods. In this review, information about the sensory analysis methods and usage fields were discussed.

Keywords: Sensory analysis, Human sense, Sensory evaluation, Quality evaluation

Soil Quality of Mined Lands in SAP Region The Effect of Different Pear Rootstocks on the Performance of

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Abstract

Agricultural land, as large as two Cyprus's total land, in Sanliurfa, Mardin, Kilis, Hatay, Gaziantep, Sirnak regions is currently unproductive because of land mines. Removal of mines from these unattended lands will provide an opportunity for the formation fields suitable for organic agricultural production. Distribution of mined lands, according to the agricultural enterprise scale, to the local growers may lead to establishment of 2-5 thousands of family enterprises. Another specific feature of this land is its suitable climate conditions for early harvesting besides fruit growing, livestock breeding, organic or industrial agricultural production. Along the southern border of Turkey since 1956 mines have been laid for security purposes and cover large areas. There is no clear information about the total length, area, other cultural and economic value of the mined area, which ranges from 300 to 750 m in width. It is aimed to know the agricultural power, natural and cultural potential before the mine clearance and earn an economy in these places which have not been used for security purpose since about 60 years.

Keywords: SAP Region, Sanliurfa, Organic Agriculture, Mine.

Antioxidant properties of different solvent extracts from *Colutea cilicica*

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Abstract

Antioxidant properties of ethyl acetate, methanol, and water extracts from *Colutea cilicica* (Fabaceae) were investigated with spectrophotometric methods. Antioxidant capacity were evaluated using different assay including free radical scavenging (DPPH and ABTS), reducing power (FRAP and CUPRAC), phosphomolybdenum, and metal chelating. Total phenolic and flavonoid contents were also determined. Generally, *C. cilicica* ethyl acetate and water extracts possess higher antioxidant effects compared to methanol extract. These findings suggest that the *C. cilicica* could serve as an important natural source of biologically active agents for using in food and pharmaceutical industry.

Keywords: *Colutea cilicica*, antioxidant properties, natural products.

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Transcriptome based identification of two serine protease inhibitors from sunn pest

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Abstract

Most serpins were identified as serine protease inhibitors which regulate various physiological processes such as blood coagulation, programmed cell death, growth and development, digestion, and immune responses. Various proteins and substances are acquired by insects from their host plants during feeding. Some of these substances such as proteinase inhibitors and secondary metabolites are detrimental to insects. In order to eliminate this toxic effect insects increase production of proteinases and other detoxification enzymes. These counteractive measures such as increased protease-inhibitory activity are deployed for protection of critical gut structures from undesirable proteolytic activity of the elevated insect proteases. On the other hand host plants also produce proteinases that disrupt insect gut barriers such as peritrophic matrix. Among them serpins may be to protect against host-derived proteases. In this study using transcriptome based approach we have identified two full length sequences of serine protease inhibitors from sunn pest, *Eurygaster maura* which is an important insect pest that predominantly attacks grains. According to blast analysis results the deduced amino acid sequence of new transcripts share identity with *Halyomorpha halys* Serpin B3 and Serpin B8, respectively. One of the transcripts denoted as EmSPNB8 contains an open reading frame of 1152 nucleotides that codes for a protein of 383 amino acid residues with a predicted molecular mass of 43.1 kDa while the other transcript denoted as EmSPNB3 encodes contains an open reading frame of 1170 nucleotides that codes for a protein of 389 amino acid residues with a predicted molecular mass of 44.0 kDa. We also described sequence features and phylogenetic analysis of EmSPNB3 and EmSPNB8 and showed serine proteinase inhibitors containing domains of both proteins. Characterization of digestive proteolysis in different insect species would enable more choice of protease inhibitors in pest management strategies.

Keywords: Serine protease inhibitors, Sunn pest, transcriptome analysis, pest management

A potential Target for Sunn Pest Control: Identification of Odorant binding Protein in *Eurygaster maura*

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Abstract

Eurygaster maura (Hemiptera: Scutelleridae), is the dominant pest of cereal crops in the Near- and Middle-East, West and Central Asia, North Africa, and Eastern and Southern Europe. The current management strategy for this pest mainly relies on chemical control. In addition to the high cost, insecticides pollute the environment, as well as killing non-target insects, whilst resistance has developed to various types of insecticides in this species. In recent years, different potential target sites for pest management have been identified. Among them Odorant Binding Proteins (OBPs) are proposed to be directly required for odorant discrimination and represent potential interesting targets for pest control. OBPs are considered to be crucial to insect-specific and are predominantly expressed in antenna. RNA seq analysis generated from the fat body of field-collected *E. maura* adults revealed a transcript which encodes an odorant binding protein. The protein was denoted as *E. maura* Odorant Binding Protein (EmOBP) based on the BLAST analysis indicating homology with OBPs from *Chinavia ubica* (Hemiptera: Pentatomidae) (identity value: 55%), *Halyomorpha halys* (50%) (Hemiptera: Pentatomidae), and *Triatoma brasiliensis* (Hemiptera: Reduviidae) (32%). The putative EmOBP identified in the fatbody had the predicted domain of insect pheromone/odorant binding protein domains. The phylogenetic analysis for the EmOBP with the other hemipteran sequences showed an intraspecific divergence of the putative OBPs. Future studies of the binding characteristics of these OBPs are warranted to determine their roles in the odorant reception in sunn pest species.

Keywords: Odorant binding Proteins, *Eurygaster maura*, RNA seq analysis, pest management

Determination of Fungal Microflora of Dried Persimmon Fruits Sold in Izmir Markets

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Abstract

Persimmon fruit is often consumed fresh during the season due to its short shelf life but it is also consumed as a dried fruit. In recent years, dried persimmon fruits with moldy appearance as a whole is sold by small-scale local enterprises. In this study, the fungal microflora of both the fruit surfaces and the inner parts of the whole dried persimmon fruit sold in the Izmir markets were examined. Mold and yeast and also osmophilic yeasts counts were determined by using acidified Potato Dextrose Agar and Malt Extract Agar containing 40% sucrose, respectively. Pour plate technique was used and then plates were incubated at 25 °C for 5 days. Mold isolates were identified considering their cultural and morphological properties. In this study, it was observed that the numbers of mold were in the range of 3.5×10^1 - 4.2×10^4 cfu/ml and the dominant microflora of the analyzed samples was determined as *Rhizopus* spp., *Penicillium* spp. and *Aspergillus* spp.

Keywords: Dried persimmon fruit, fungal microflora, osmophilic yeast, *Aspergillus* spp., *Penicillium* spp., *Rhizopus* spp.

Modelling of extraction parameters of microwave and freeze-dried paprika oleoresins

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Abstract

In our country, open air and hot air drying methods are mostly preferred for drying of red peppers. These methods cause deterioration in taste, color and homogeneity of melt during drying, reduction of rehydration ability negative effects on the trace amounts of antioxidants and phenolic compounds showing functional properties. Therefore, freeze-drying and microwave drying methods were used for drying of red pepper. Dried and powdered products compared according to their color, antiradical capacity and total amount of extractable carotenoids.. Extraction time, temperature and sample/solvent ratio were tested and optimized as a parameter in two different drying methods by using response surface methodology Microwave drying was performed using the batch microwave unit. Drying processes were made in a batch mode at 540 W working power until it reaches the final product moisture (7.5%). Intermittent microwave application; 30 s is active and 60 s is passive (30/60). In the freeze drying method, the samples were dried to reach the specified moisture content of (7.5%) under vacuum at low temperature. In this context, Response Surface Methodology (RSM) was used to optimize the extraction system and variable parameters were optimized. The optimization process was repeated in both drying methods. Extraction was carried out in a temperature controlled shaking water bath, and the solvents were removed in rotary evaporator. The design variable points were set at 30, 40 and 50 ° C for temperature, 10, 20 and 30 minute for time, 1: 5, 1:10 and 1:20 for plant material-solvent ratio. The effects of these variable parameters on extraction yield, total extractable carotenoid amount and antiradical activity were investigated. The results were evaluated together with 3D graphics and the best drying method and extraction conditions were determined. Thus, extraction conditions were found mathematically and It is provided that the parameters studied can be estimated by regression models depending on the changing factor level.

Keywords: Extraction, response surface methodology, Capsicum annum L.

Chemical Characteristics of Sucuk

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Abstract

The main changes affecting the quality of sucuk, durability and reliability (microbial, chemical and sensory) occurs during the maturation process of the sucuk. Chemical changes that affect the quality of the sucuk are affected by the several parameters such as pH, salt, fat, spices oils (such as black pepper, red pepper, cumin, cinnamon, allspice and clove) and starter culture and additives like antimicrobials, antioxidants (nitrite/nitrate, ascorbic acid, α -tocopherol, phosphates). The reason of this study was to explain (pH, TBA values, fat, salt, protein, ash, nitrosomyoglobin conversion, residual nitrite level, water activity and biogenic amine concentrations,) qualities of sucuk. The main chemical changes (colour, flavour, odour, rancidity and biogenic amine formation) are mainly developed in the fermentation period. Sucuk type of fermented meat products are produced in many parts of the world with different formulations. According to the standard of Turkish Standard, sucuk should have the pH values between 5.2 and 5.4, the amount of moisture in the sucuk should be up to 40%, the amount of salt should be at most 5%. TBARS (Thiobarbituric acid reactant substances) content is a lipid oxidation marker in meat and meat products. Spices are generally used in sucuk for enhancing the flavour and/or colour attributes. Additives such as nitrites that interaction of the meat pigments (myoglobin) cause toxic and carcinogenic effect. Sucuk have observed residual nitrite level in the range from 4.00 to 11.25 mg kg⁻¹. The putrescine, histamine, cadaverine, tyramine, tryptamine, β -phenylethylamine, spermidine and spermine most important biogenic amines comprise in sucuk.

Keywords: Chemical changes, Nitrite, pH, Sucuk, TBA,

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Determination of Land Use Planning and Soil Conservation Measures Based on Soil Erosion Classification in a Rural Basin By SLUP Model

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Abstract

This study was conducted in Celikli catchment, located in Tokat city of Turkey. The Sustainable Land Use Planning (SLUP) model was applied in the catchment for sustainability. Georeferenced soil samples were taken from top soil from 159 sampling points. The potential soil losses of the basin are calculated with USLE method. The soil losses varied between 0-143 ton ha⁻¹ year⁻¹. The erosion risk was determined in five classes by SLUP model. The main problem in the basin had soil erosion due to land use problems such as improper land use, deforestation, and overgrazing. While the estimated average soil loss was determined to be 5.68 t ha⁻¹ per year, some land use changes were proposed and land use management priorities were set in the direction of the model results to gain sustainable management in the Celikli basin.

Keywords: Soil erosion, SLUP model, USLE, soil management, Tokat

Identification and Molecular Characterization of *Hsp90* Genes in Melon

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Abstract

Heat shock proteins (HSPs) are one of the protein families that are synthesized in many organisms under stress, as well as in normal conditions. In plants, HSPs are involved in both the normal developmental stages of plants and abiotic stress conditions like high and low temperature, drought and salinity. Hsp90 proteins, which are the members of HSP family, play a role in not only response to abiotic stress responses such as heat, drought and salt but also in seedlings, leaves, hypocotyl and reproductive development in plants. Melon belonging to Cucurbitaceae family is an important fruit with a mass production of 26 million tons of 12 billion m² of area in the world. Although the whole genome has been sequenced, HSPs have not been identified in melon, yet. In this study, 37 *Hsp90* genes (*CmHsp90*) were found out using bioinformatics tools. Examination of the intron-exon organization revealed that Hsp90 family members share similar genomic structures in terms of high homology, number of introns, and exon length. Also, BLASTP search was performed in the Phytozome Database (PDB) to establish the homology model of 37 melon HSP90 proteins. Homology modeling and intensive mode estimates were used in Phyre2 to improve alignment accuracy. All the Hsp90 proteins were modeled with >90% confidence and the amino acid composition was similar in the range of 80-100%. It was observed that the most frequent locations in the cell were the intracellular, cell part and organelles, respectively and the predicted secondary structures populously contained α -helix chains and the proteins were acidic (pI <7). Our study may sort out further study of the functions of the *CmHsp90* proteins and may provide important contributions to the understanding of the evolution of *Hsp90* genes in different species.

Keywords: Heat shock proteins, Hsp90, melon, molecular characterization

DNA Barcoding Analysis of *Anopheles Claviger* from Turkey

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Abstract

Anopheles mosquitoes are important vectors of malaria and lymphatic filariasis, which are major public health diseases. *Anopheles claviger* is a Palaearctic species which is distributed all over Europe, the Middle East and North Africa. The larvae live in a wide range of habitats, but most species prefer unpolluted, semipermanent and permanent water bodies. Here we presented molecular characterization and phylogenetic analysis of *A. claviger* using DNA barcoding analysis. Water samples including mosquito larvae were collected from different natural breeding sites in Muğla Province and transferred to laboratory for genetic analysis. Total genomic DNA was extracted from individual larvae and the COI (*Cytochrome c oxidase subunit I*) gene region was amplified using the LCO and HCO universal primers. PCR products were subjected to bidirectional sequencing. The COI consensus sequences were compared (BLASTn) to the NCBI nr database for species identification. BLAST results indicated that only one sample belonged to the species *A. claviger* and all analyzed COI sequences showed the highest identity of up to 99-100%. Neighbor-joining tree based on K2P genetic distances of sequences from the mitochondrial COI gene of other mosquito species was created. This study provides the first molecular confirmation of *A. claviger* from Turkey. The DNA barcodes produced in this work are an important contribution in the identification of *A. claviger* species. Barcoding a broad range of mosquito species will allow a broader knowledge of the mosquito species and prevalence which is of major importance for an effective control of vector borne diseases.

Keywords: *Anopheles claviger*, *Cytochrome C oxidase subunit*, DNA barcoding, vector control

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The Current Situation and Problems of Sheep Breeding in The City of Usak and Suggestions for Solutions

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Abstract

In the current study, the aim is to reveal the current situation of the sheep breeding organizations in the city of Usak, to determine their primary problems and to offer some suggestions for their solutions. In the current study, a total of 429 sheep breeding organizations (Center 92, Esmé 204, Banaz 38, Ulubey 43, Sivaslı 35, Karahallı 14) selected through the stratified sampling method to represent the whole population were taken into the sampling of the study. Through a questionnaire administered in these organizations, data of the study were collected and analyzed. Solutions were suggested for the determined problems. The questionnaire items were developed to elicit the general structure and basic operational and breeding activities and to determine the primary problems and satisfaction level of the breeders. The collected data were analyzed in SPSS program package by using the suitable statistical techniques.

Keywords: Sheep breeding, questionnaire, satisfaction, problems, care, feeding, Usak.

The Effects of Poppy Oil on Formation of Biogenic Amines in Fermented Sucuk

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Abstract

Biogenic amines are usually the result of decarboxylation of amino acids by microbial enzymes. These compounds may have toxic effects in humans and animals. Biogenic amines are formed in fermentation, maturation and storage conditions in meat and meat products. Sucuk is a favorite meat product in Turkey. Sucuk are produced using two different production technologies (fermented and heat treated). Fermented sausages are more preferred in terms of flavor and aroma formation. In this study, the effect of poppy oil on the formation of biogenic was investigated amines in fermented sausages. Two groups of sausages (control and poppy oil (300 mg / kg) were produced. The prepared sausage samples were fermented for 15 days at relative humidity (90-60%) and temperature (25-18 ° C). Sucuk samples were taken at 0, 2, 4, 6, 8, 10, 13 and 15 days at during fermentation process. pH, acidity, dry matter, total bacteria number, lactic acid bacteria number, yeast / mold number , biogenic amine (histamine, putrescine, tryptamine, phenylethylamine and tyramine), Color (only 15th day) and sensory analyzes (only 15 th day) were performed in sucuk samples. As a result, the pH 5.00-4.95, acidity 2.19-2.18, dry matter 60.49-61.91, total bacteria number 7.56-7.60, lactic acid bacteria number 7.65-7.24 and yeast / mold 4.50-3.90 were found respectively in the control and poppy oil groups ($p > 0.05$). No significant difference was found between color values (L, a, b) between the two groups ($p > 0.05$). According to the sensory analysis performed at the 15th day, the control and poppy group received 8.17 and 7.50 points respectively ($p > 0.05$). There was no difference between the control and poppy groups in the levels of phenylethylamine, tryptamine, and putrescine in terms of biogenic amine formation during the fermentation period. However, between control and poppy oil groups were found differences in the levels of tyramine and histamine. Consequently, it has been determined that the poppy oil used in the fermented sausage production does not adversely affect the general characteristics properties of Sucuk. It has been found to reduce to 1 log level the number of yeast molds. It also reduced histamine formation according to the control group. Alternatively, the use of poppy oil in the fermented sausage production can be recommended.

Keywords: biogenic amines, fermentation, poppy oil, Sucuk

Detection of the fungal diseases in pomagranates grown in Kahta, Adıyaman, Turkey

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Abstract

In this study, diseases causing significant crop losses in pomegranate (*Punica granatum*L.) were surveyed. The study was conducted in tree pomegranate plantations located in villages of Kahta, Adıyaman. Observed diseases were determined in 162 total samples obtained from 7 different villages in total of 17 pomagranete tree gardens. Results indicated that 60,50% of samples were *Aspergillus* fruit rot (*Aspergillus niger*), 12,35% were Brown decay (*Alternaria alternata*), 12,35% were *Penicillium* spp., and 0,61% were yeast (*Saccharomyces cerevisiae*) and 14,19% were Carob moth (*Ectomyelois ceratoniae*).

Keywords: Survey, Pomegranate, *Aspergillus*, *Penicillium*, *Alternaria*, Fruit Decay

**Chromosome studies of *Origanum* (Lamiaceae) section
Majorana from Turkey****Esra MARTİN¹, Tuncay DİRMENÇİ², Esra KARAKAŞ¹, Turan ARABACI³**¹Biotechnology Department, Necmettin Erbakan University, Konya, Turkey²Biology Education Department, Balıkesir University, Balıkesir, Turkey³Department of Pharmaceutical Botany, Faculty of Pharmacy, İnönü University,
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Abstract

The number and size of the chromosomes in the *Origanum* L. genus which belongs to *Majorana* (Mill.) Benth. section were studied using the Image Analysis System. This section comprises *Origanum majorana* L., *O. onites* L. and *O. syriacum* L. subsp. *bevanii* (Holmes) Greuter & Burdet. Cytogenetic analysis of three localities from *Origanum majorana* naturally grow in Mersin and Karaman were studied. Chromosome number of samples named as 3984, 4346 and 4356 was $2n = 30$. Average chromosome length of the 3984 sample was $0.57 \mu\text{m}$ while the same length was measured as $0.57 \mu\text{m}$ for the 4356 plant sample. Also, haploid chromosome numbers of samples numbered as 3984 and 4356 were $17.25 \mu\text{m}$ and $17.35 \mu\text{m}$, respectively. Additionally, relative length changed between 2.89 and 9.15 for the 3984 sample while the same length was ranged between 2.47 and 10.60 for the 4356 sample. Furthermore, *O. onites* was studied from the 4355 plant sample naturally grow in province of Denizli. Diploid chromosome number of this sample was detected as $2n = 30$. The 4355 sample has $0.53 \mu\text{m}$ average chromosome length, $15.93 \mu\text{m}$ haploid chromosome length and its relative length was changed between 3.13 and 11.11. In addition the sample named as 4336 was studied from *O. syriacum* subsp. *bevanii* naturally grow in province of Osmaniye. Diploid chromosome number of this sample was $2n = 30$. The average chromosome number of the 4336 sample was $0.54 \mu\text{m}$ while its haploid chromosome and relative lengths were measured as 16.26 and between 3.25-9.71, respectively. In the end of morphological measurements, it is clearly demonstrated that *O. majorana* has minimum chromosome length with $0.43 \mu\text{m}$ among other taxa. On the other hand, *O. majorana* has the maximum chromosome length of $1.84 \mu\text{m}$. *Origanum onites* has the minimum haploid chromosome number ($15.93 \mu\text{m}$) while *O. majorana* has the maximum value ($17.35 \mu\text{m}$). Also, the minimum relative length was 2.47 for *O. majorana* and the maximum was 11.11 for *O. onites*. While the average length of somatic chromosomes was the minimum for *O. onites* with $0.53 \mu\text{m}$, the maximum value for the same length was measured as $0.57 \mu\text{m}$ for *O. majorana* samples named by 3984 and 4356. All karyotype analyses of the samples were done by Image Analysis System.

Keywords: Image Analysis System, Karyotype, *Origanum***Acknowledgements:** We express our gratitude for financial support provided by TUBITAK (Project no. KBAG-113Z225).

The effects of in ovo pollen extract injection into fertile broiler eggs and fasting time on hatchability and four day growth of broiler chicks

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Abstract

The aim of this study was to determine the effect of in ovo pollen extract injection into fertile broiler eggs and fasting time (24 and 48 h) on hatchability and four day growth of broiler chicks. A 2X2 factorial design was used in this study, each treatment group included six replicate, and each replicate included six mixed sex (3 male and 3 female) chicks. In this study, 180 fertile eggs divided into two injection group (in ovo pollen extract injection group and no injection as control group). In ovo injections was carried out at 18 d of hatch. Hatchability rates were 88.00% in in ovo pollen extract injected group and 86.67% in control group. After hatch, 144 healthy one d old average 49.54 ±0.17 g broiler chick (72 in ovo injected and 72 control) was exposed to two fasting time (24 and 48 h). Treatment groups were: C24: Control 24 h fasting, C48: Control 48 h fasting, P24: Pollen extract injection and 24 h fasting, P48: Pollen extract injection and 48 h fasting. The experiment lasted 4 days. At the end of study, growth of P24 and C24 groups was higher than C48 group, but P48 group's growth was not different from P24 and C24 groups. It was found that in ovo pollen extract injection has any negative effect on hatchability and improved growth in the event that chicks exposed to 48 h fasting time after hatch. To conclude, in ovo pollen extract injection into fertile eggs may be used as in ovo nutrient for broiler chicks.

Keywords: pollen, pollen extract, in ovo nutrition, chicks

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Trend Analysis on Production and Foreign Trade of Grape in Turkey

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Abstract

Grape is the one of the major crop produced and exported in fruit growing in Turkey. In 2015 3.650.000 tones grapes produced from 461.956 hectares. Table grapes get 51,83% share from total production and dried grapes followed these with 36,6%, wine grapes 11,6%. Grape is also one of the most important product which takes place in Turkish agricultural export. In 2015, Turkey exported 175.174 tones table grapes, 223.858 tones dried grapes (sultanas) and get 569.054\$ income. In this research we aimed to investigate grape production and export during 2000-2016 with trend analysis. Data used in the study is obtained from Turkish Statistical Institute Crop Production and Foreign Trade Statistics.

Keywords: Grapes, Production, Export, Trend Analysis, Turkey

The Use of Elemental Sulfur for Reclamation of Saline-Sodic Soils in The Lower Seyhan Plain

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Abstract

This study was carried out to investigate the possibilities of using elemental sulfur with different application rates and various incubation durations on the salt transport and exchangeable sodium percentage of the saline-sodic soils. The Study was conducted under controlled conditions of the laboratory. In the experiment, saline-sodic soil of Sirkenli Series in the Lower Seyhan Plain were used. Air dry degraded soil samples of the same amount mixed with different sulfur contents, (2, 4, 6, 8 g/kg). The mixtures were incubated for 30 and 60 days in an incubator at 28 °C and water retention capacity of 50%. Leachings were carried out by applying 3 cm of water to each treatment. Leachings were repeated at every 48 hour time span. It was determined that the tested elemental sulfur rates impacted the leaching of salts differently depending on the incubation duration. In this study, the maximum pH reduction was obtained with 30-day incubation period. The average pH level of all sulfur levels with 60-day incubation period was determined to be about 13% greater than that with 30-day incubation period. Impacts of sulfur rates and incubation durations on reduction in exchangeable sodium percentage (ESP) were found to be statistically different at the confidence level of 99%. The statistical analysis showed that a 30-day incubation period with 6.2 g/kg of sulfur was the most effective treatment in exchangeable sodium percentage reduction. In the study, it was determined that, at the beginning of the leaching process, the longer incubation duration resulted in an aggregation in the soil structure and in a decrease in ECe values by reducing the solubility of several elements. During the leaching process, the ECe values increased as the solubility of the anions and cations were increased. As a result of this process, the amount of water necessary for the leaching were increased.

Keywords: Elemental Sulfur, Soil reclamation, Saline-sodic soils, Lower Seyhan Plain, Exchangeable Sodium Percentage

Antioxidant activity of yeast (*Saccharomyces cerevisiae*) enriched cookies

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Abstract

Cookies are one of the most important cereal products that gaining popularity in recent years. There have been various studies about increasing the quality and functionality of cookies with natural products and extracts. *S. cerevisiae* cells, today's the only species fully acceptable as food for humans, contain proteins, β -glucan, lipids, minerals, various vitamins and also high amounts of glutathione (GSH). The GSH is the most abundant non-protein thiol (γ -glutamylcysteinylglycine) and is found in cells as millimolar concentrations. One of the major functions of GSH is serving as antioxidant in animals, plants and microorganisms. The aim of this study was to determine the changes in the antioxidant activity of cookies enriched with inactive industrial yeast cells and pure GSH. Yeasts were inactivated in oven at 120°C for 30 minutes. 10% (in flour basis) inactive yeast and 23 mg/recipe of pure GSH, equal to the level of GSH in 10% yeast, were added to cookie formulation. The antioxidant activities of the cookies were determined by DPPH (1,1-diphenyl-2-picryl-hydrazyl), CUPRAC (cupric ion reducing antioxidant capacity) and ABTS⁺ (2,20-azino-bis/3-ethyl-benzothiazoline-6-sulfonic acid) assays. According to the results, the DPPH scavenging activity (43.66%), CUPRAC (913.15 mg trolox/100 g) and ABTS⁺ (151.95mM trolox/ g) assays of the cookie with yeast had the highest antioxidant activities compared to other cookie samples. The reasons can be assumed that the yeasts synthesized GSH and other bioactive compounds and the eukaryotic structure of yeast cell wall had excellent potential as capsule material. Browning reactions during baking process could also increase the antioxidant capacities of the cookies. However, nucleophilic properties of sulphhydryl compounds inhibit the browning reactions. Therefore, cookies with pure GSH had the lowest antioxidant activity. Results showed that addition of inactive yeast cells enhances significantly the functional properties of cookies.

Keywords: inactive yeast; antioxidant activity; cookie

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Modelling of Extraction Parameters of Microwave and Freze-Dried Paprika Oleoresins

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Abstract

In our country, open air and hot air drying methods are mostly preferred for drying of red peppers. These methods cause deterioration in taste, color and homogeneity of melt during drying, reduction of rehydration ability negative effects on the trace amounts of antioxidants and phenolic compounds showing functional properties. Therefore, freeze-drying and microwave drying methods were used for drying of red pepper. Dried and powdered products compared according to their color, antiradical capacity and total amount of extractable carotenoids.. Extraction time, temperature and sample/solvent ratio were tested and optimized as a parameter in two different drying methods by using response surface methodology Microwave drying was performed using the batch microwave unit. Drying processes were made in a batch mode at 540 W working power until it reaches the final product moisture (7.5%). Intermittent microwave application; 30 s is active and 60 s is passive (30/60). In the freeze drying method, the samples were dried to reach the specified moisture content of (7.5%) under vacuum at low temperature. In this context, Response Surface Methodology (RSM) was used to optimize the extraction system and variable parameters were optimized. The optimization process was repeated in both drying methods. Extraction was carried out in a temperature controlled shaking water bath, and the solvents were removed in rotary evaporator. The design variable points were set at 30, 40 and 50 ° C for temperature, 10, 20 and 30 minute for time, 1: 5, 1:10 and 1:20 for plant material-solvent ratio. The effects of these variable parameters on extraction yield, total extractable carotenoid amount and antiradical activity were investigated. The results were evaluated together with 3D graphics and the best drying method and extraction conditions were determined. Thus, extraction conditions were found mathematically and It is provided that the parameters studied can be estimated by regression models depending on the changing factor level.

Keywords: Extraction, response surface methodology, *Capsicum annum L.*

Investigation of Antioxidan Enzyme Activities and Growth Performance in Rainbow Trout (*Onchorhynchus mykiss*) Juveniles Fed Diets Supplemented With Lichen (*Usnea barbata*).

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Abstract

In this study, antioxidant effects of lichen (*Usnea barbata*) in rainbow trout were investigated. With this aim, four different concentration of aqueous methanolic extract of the plant (0 % (Control), % 0.1, %0.5 and % 1) were prepared and added to the feed. Fish were fed with the diet for 75 days. The tissue samples (liver and white muscle) were taken from each experimental groups at every 15th, 45th and 75th day of the study. From all samples, to determine antioxidant activity, SOD, CAT, GPX, G6PDH and lipid peroxidation were investigated. At the end of the study, growth performance was also determined. In the study, SOD activity was decreased compared to control in all sampling time except 15th day of the study in % 0.1 group CAT showed no activity compared to control ($P>0.05$) in all experimental groups. GPX activity showed no differences on the 15th day of the study compared to control. There was an increasing activity in group %1, and decreasing activity in group %0.1 and % 0.5 compared to control ($P<0.05$). G6PDH was increased in plant groups compared to control on the 15th day of the study. All the other sampling time, G6PDH was significantly decreased compared to control. Lipid peroxidation in lichen groups was significant increasing. No significant differences were determined among groups in terms of growth performance. According to the study results, lichen showed no antioxidative activity.

Keywords: Rainbow trout, medicinal plant, aqueous methanolic extract ,antioxidane activity, *Usne barbata*

Weed Control Methods in Cotton Fields –Example Diyarbakir

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Abstract

It is known to cause economic losses arising from mistake herbicide application in cotton production, which is the locomotive sector of Diyarbakir. A survey questionnaire was conducted over 80 cotton farmers in 2016 to evaluate the weed problems in cotton fields in Diyarbakir. The survey included 16 questions about weeds, herbicides, tillage and crop rotation. The research showed that the most common weeds in cotton production fields were cocklebur (*Xanthium strumarium* L.), nightshade (*Solanum nigrum* L.), groundcherry (*Physalis* spp.), pigweed (*Amaranthus retroflexus* L.), johnsongrass [*Sorghum halepense* (L.) Pers.], bermudagrass (*Cynodon dactylon*), jimsonweed (*Datura stramonium* L.), purslane (*Portulaca oleraceae* L.), dyer's croton [*Chrozophora tinctoria* (L.) Rafin] and sedge (*Cyperus rotundus* L.) was 51, 22, 8, 5, 5, 3, 3, 1, 1 and 1%, respectively. Only glyphosate used as a total herbicide (100%) to control of emerged weeds. Across the province, growers used pendimethalin, fluometuron, benfluralin trifluralin, metholachlor-S+benoxacor 55, 33, 5, 2 and 1% respectively as pre-plant herbicides to control broadleaf, also fluometuron (6%) pre-emergence. It was detected that growers (88%) preferred herbicides to control grass (clethodim, haloxyfop methylester, quizalofop p-ethyl, tepraloxym, cycloxydim, fluazifop p-butyl, and propaquizafop was 36, 25, 22, 8, 5, 3, and 1 respectively) and 12% did not use herbicide. Price, weeds, rain or irrigation, and crop rotation was 53, 19, 16, and 12% respectively in herbicide choice. Grower stated that tillage system used two (%78), three (24%) and one (3%). Since the rhizomes and grass are not controllable by hoeing, such as johnsongrass and bermudagrass, the hoeing is made for broadleaf. The preceding crop of cotton were cotton (58%), maize (30%) and wheat (12%). This study suggests that it is important to investigate weed control methods in cotton fields and to develop pre-emergence and post-emergence control methods besides pre-plant herbicide.

Keywords: Diyarbakir, Cotton, Weeds, Herbicides

The Determination of Natural Enemies of the *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) in Tomato-Growing Areas of Sanliurfa Province

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Abstract

The study was conducted during the 2015 and 2016 growing seasons to determine the parasitoids and predators of *T. absoluta*, the key insect pest of tomato in Sanliurfa province. In this study, field surveys were carried out as the farmers transplanted their tomato seedlings to the fields. However, field visits in the studied districts began in May and tomato-growing fields were identified. In order to determine the emergence of the adult stage of *T. absoluta*, one delta-type sexual pheromone trap was set up in each district. The first adult appearance in these traps occurred during the May in the Yaylak town of Bozova district. In Hilvan district, it has been determined that the *T. absoluta* damage began in June in the field where the sexual pheromone trap was established. The predators or parasitoids of *T. absoluta* were recorded by controlling the insects captured through shaking, striking in the tub, mouth aspiratör and observations. In addition, infested tomato leaves and fruits were brought to the laboratory and cultured. Eventually, the emerged parasitoids were sent to the specialists for identification. According to the identification results, all parasitoids were belonging to the family Braconide (Hymenoptera), while the predators in general belonged to the family Coccinellidae (Coleoptera) and the family Miridae (Hemiptera).

Keywords: *Tuta absoluta*, Sanliurfa, Braconide, Coccinellidae, Miridae.

Bacillus amyloliquefaciens (ET) produces new fengycin homologues**Asma Ait Kaki, Monira Kara Ali, Nassim Moula, Noreddine Kacem Chaouche****Abstract**

Fengycin cyclic lipopeptides are widely known for their important role in plant diseases biocontrol. This is due to their potent antimicrobial activity and involvement in plant systemic resistance elicitation. The main objective of this study is to characterize fengycin variants produced by the *B. amyloliquefaciens* strain (ET). The fengycin mixture was precipitated with (6 N) HCl and extracted by 80% acetonitrile solvent. CID-LC.MS analysis of fengycin extract has shown several molecular ion peaks MH^+ , corresponding to conventional fengycin homologues (MH^+ :1463.9; 1491.9; 1506) and some new ones (MH^+ : 1433; 1447; 1461; and 1477). Further characterization of these precursor ions was carried out by CID-MS.MS analysis. Key product ions obtained (A/B) correspond to a cleavage of Orn2-Tyr3 (segment A), Glu1-Orn2 (segment B), were used for identifying fengycin variants. The diagnostic product ions at (921.5/1080.5) and (m/z 949.4 and 1108.5) represent fengycin A and B, respectively. The diagnostic ion at (980/1094) may correspond to fengycin C3, D, S or B2. Interestingly, unknown diagnostic product ions at (951/1065) and (979/1093) were detected for the first time in this study, which correspond to new fengycin variants that we called fengycin X and fengycinY, respectively. The comparison between fengycin A and fengycin X after analyzing their opened forms by CID-MS.MS, has proved that fengycin X results from a substitution of the glutamine amino acid (Q), at the position 8 of fengycin A peptide part, by the Isoleucine (I) or Leucine (L) . This mutation should be the same in fengycin Y but compared to fengycin.

Keywords: Fengycin, Bacillus, mass spectrometry, new variant

***Bacillus amyloliquifaciens* (9SRTS) had important in vitro biocontrol features and increased chickpea yield production under pots and field experiment**

Asma Ait Kaki, Monira Kara Ali, Nassim Moula, Noredine Kacem Chaouche

Abstract

Over the millennia and with the continued expansion of the world's population, agriculture has grown strongly, giving rise to "The Green Revolution", characterized by the intensive use of chemicals, threatening the environment and human Health. Bacteria belonging to *Bacillus* genus are currently used as bio-control and bio-fertilizer agents in organic farming, as an alternative to the conventional agriculture. In the present work, the strain *Bacillus amyloliquifaciens* (9SRTS) was isolated from the plant *Calendula officinalis* and characterized by a high sporulation yield in a bioreactor culture conditions, reaching $10E10$ spores ml^{-1} . This bacterium had shown an important antagonistic effect on PDA, against *Alternaria alternata*, *Aspergillus niger*, *Botrytis cinerea*, *Cladosporium cucumerinum*, *Fusarium oxysporium* and *Fusarium sp.* This antimicrobial effect is due to the ability of the strain 9SRTS to produce, in vitro, cells wall degrading enzymes, namely: protease and cellulase, as well as the three antibiotic families of cyclic lipopeptides (C-LPs: surfactins, iturins and fengycins). *B. amyloliquifaciens* (9SRTS) had shown some biofertilizer performances in vitro. In fact, it produced about $9.5 \mu g ml^{-1}$ of indol-3-acetic acid (IAA) and formed 6 to 10 mm zone diameter of siderophores on chrom azurol S (CAS) medium. Under pots experiment, treatment of the soil with a suspension of this bacterium (10^7 cells ml^{-1}) had a positive effect on root mass (0.37 vs 0.06g), and decreased disease rating (41 vs.74%); after one month of chickpea seed (Mega grain tradind CO. (P): Kabuli variety) sowing. In the open field, the bacterium 9SRTS allowed obtaining a chickpea total mass of 153g, versus 114g in the control lot. To conclude, *B. amyloliquifaciens* (9SRTS) could be a feasible bio-agent products that can be used further for improving the crop systems.

Keywords: *Bacillus*, biocontrol, field, PGPR

Monitoring of Heavy Metals in Spices and Herbal Plants from Turkey

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Abstract

Spices and herbal plants contain heavy metal ions over a wide range of concentrations. As each element has one or more specific structural or functional roles in the plant, in the absence of that element, the plant will be expected to exhibit certain morphological or biochemical symptoms of that deficiency. Some of these elements are toxic to humans even at considerably low concentrations. Especially, toxic trace heavy metals like cadmium and lead are known to pose a variety of health risks such as cancer, mutations or miscarriages. The spice and herbal plant samples were collected from western Anatolia. Fifty farmers visited for sample collection. The spice and herbal plant samples purchased from farmers. In the present work, trace metal levels in eleven different spice and herbal plant species from western Anatolia, Turkey were determined by atomic absorption spectrometry. The levels of the investigated heavy metal ions studied compared well with levels in herbal plants and spice samples from other parts of the world. Generally, lower levels of the investigated metals were found in the roots of the samples than in the leaf of the samples, because of the transportation of the metals from the roots to leaf. The values in the present work for the levels of the traces metal ions in the herbal plants and spice samples from western Anatolia, Turkey could help in the food composition tables for Turkish people.

Keywords: Herbal plants, Spice, Traces heavy metals, Atomic Absorption Spectrometry

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The Importance of Traceability of Fisheries for Marketing

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Abstract

According to EC 178/2002 traceability defined as “traceability and ability to pursue all steps of production, procession and distribution of food, bait and materials produced to add or expected to add in food or bait”. In fisheries that can be decayed easily and be dangerous for people due to the way it produced, traceability is considerably important. Fisheries can be obtained by two ways named fishing and farming, but it can be seen that on the packages of the species that are produced with farming in Turkey, there is not by all means but some information about traceability. On the tags of that package, there are usually insufficiencies with the information about when, where and how the product is produced, how it is packaged and what kind of processions it has been subject to. That’s why it is come across with important problems about these products’ marketing in and out of the country. On the other hand, lack of traceability in farming causes products from banned regions and that are harmful for health to hit the marketplace. Thus, fishery that is not traced well supports trade without inspection and record. In this sense, traceability has an important function for sustainable management of fishery. Traceability begins in the boat and the points on the shore for hunting. With this procedure, the length, amount, time and place of species and properness for quota are inspected. If the fact that the only product we can sell to EU is fishery nowadays and standards of EU are considered, the importance of traceability can be understood more clearly. Thus, because of the facts that traceability in fisheries increases quality of products makes it easier in marketing, and being a tool of fishery management, it is an unquestionable truth that traceability is an important factor. In this study, by arguing the problems about traceability of fisheries, effectiveness of some approaches and applications that should be done for supplying systems of traceability.

Keywords: Traceability, aquaculture, marketing, consumption

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The Using of Nanomaterials to Milk and Dairy Products

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Abstract

Nanotechnology is increasingly being employed in food science and technology. The use of different nanomaterials as nanoparticle, nanopowder, nanoemulsion, nanoencapsulation, nanolaminate for various food components has been available in the literature. Nanoparticles and nanopowders were reported to be suitable as novel antioxidants and antimicrobials and for encapsulation of bioactive components. Nano-emulsions for foods are the kinematically stable systems having size of 10-200 nm droplets. Nanodroplets within the nano-emulsions are the most important transmission systems to ensure encapsulation, development solubility of bioactive ingredients and improve appearance/textural properties. The application of nanotechnology for incorporation of functional ingredients into milk and dairy products is at an early stage yet. It was reported that these nanoscaled ingredients could add to milk and dairy products as nanopowder or nanoemulsion form. Recent studies indicated that milk enriched with nanocalcium was promoted calcium metabolism and bone development in rats, and nanosilver particles was showed an antimicrobial effect to prevent the raw cow and camel milk from spoilage. Although nanotoxicity studies focused on non-food materials was available, it was needed that more studies on toxic effects, healthy concern and risks caused by consumed of food ingredients and products produced by nanotechnology. The objective of this study is to present the current literature about applications of nanotechnology in milk and dairy products.

Keywords: Nanotechnology, Milk, Dairy Products, Nanoparticles, Nanopowder

Anthocyanin Contents of Ice Creams Coloured With Black Rose Hip Fruit and Seeds Extracts

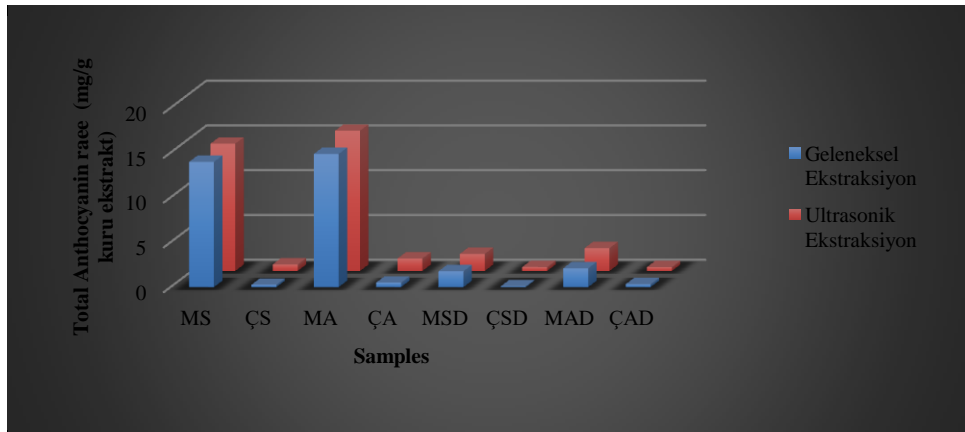
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Abstract

Even though anthocyanins are among the most widely known food colorants, their use is not so wide since their purification is difficult and they are not chemically stable. Some fruits and vegetables are known to be important anthocyanin sources like pomace of red grape, blackberry, kale, black carrot, concord grape, yam (sweet potato), radish and potato, purple corn, red onion, elderberry and blueberry. *Rosa pimpinellifolia* L. fruit (black rosehip), thought to be a good anthocyanin source from Rosaceae family was used in the present study. Anthocyanin based extracts were prepared from black rosehip fruits picked up from Kars province in October in two different solvents (purified water and ethanol acidified with 7% acetic acid) and two different extraction methods, ultrasonic and conventional. Solvents of the extracts prepared were removed using rotary evaporator at 55°C and extracts obtained were added in ice cream samples in the rate of 5%.



*FE; Aqueous extract of fruit, SE; Aqueous extract of seed, FA; Fruit ethanol extract acidified with acetic acid, SA; Seed ethanol extract acidified with acetic acid, FH; Fruit ethanol: water extract acidified with HCl, SH; Seed ethanol : water extract acidified with HCl, FWI; Ice cream produced using aqueous fruit extract, SWI; Ice cream produced using aqueous seed extract; IFA; Ice cream produced using fruit ethanol extract acidified with acetic acid, ISA;

Ice cream produced using seed ethanol extract acidified with acetic acid, IFAH; Ice cream produced using fruit ethanol : water extract acidified with HCl, ISAH; Ice cream produced using seed ethanol : water extract acidified with HCl.

According to study results, total anthocyanin rates of rosehip fruit and seed are $14.47 \pm$ and $4.25 \pm$ mg cyanidin -3- glycoside/g dry extract, respectively. It was determined that conventional and ultrasonic extraction methods changed total rates of anthocyanin in extracts while in ultrasonic method these rates increased. In conventional method, total anthocyanin rates of extracts were determined to be 0.27 ± 0.43 - 14.87 ± 0.38 mg cyanidin -3- glycoside/g dry extract, respectively while in ultrasonic method they were 0.74 ± 0.32 - 15.66 ± 0.50 mg cyanidin -3- glycoside/g dry extract. Total anthocyanin rates of ice cream samples produced by adding extracts in the conventional and ultrasonic methods were found to be 0.11 ± 0.14 - 2.11 ± 0.28 and 0.44 ± 0.27 - 2.56 ± 0.32 mg cyanidin -3- glycoside/g dry extract. In all samples, effect of solvent differences used in extraction and ultrasound application was found to be statistically significant on the rate of anthocyanin ($p < 0.05$) while it was found that extracts where ethanol was acidified with HCl and acetic acid extracted anthocyanins better.

Keywords: *Rosa pimpinellifolia* L., anthocyanin, extraction, black rosehip

Tocopherol degradation of refined hazelnut oil during heating at different temperatures

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Abstract

In this study, the change in tocopherol isomers and induction periods of refined hazelnut oils during heating at 80, 100 and 120 °C was investigated. Heating of the refined hazelnut oil at different temperatures caused degradation of α -tocopherol. Little change in other tocopherol isomers was occurred. The changes in α - and γ -tocopherol level during oxidation at all temperatures were significant ($p < 0.05$), whereas the changes in the β - and δ -tocopherol content were not significant ($p > 0.05$). Degradation of α -tocopherol in the hazelnut oil accelerated as the temperature increased and the heating period was prolonged. 64.2, 82.3 and 82.9 % of α -tocopherol degraded after 312, 276 and 216 hours at 80, 100 and 120 °C whereas, only 7.7, 39.4 and 43.4 % of γ -tocopherol degraded at these conditions. On the other hand, the induction period of the hazelnut oil decreased with increasing heating time. Induction period of the refined hazelnut oil dropped from the beginning average value of 27.37 minutes to 3.28, 1.09 and 3.37 minutes, respectively at the end of 312, 276 and 216 hours at 80, 100 and 120 °C. According to statistical analysis, the correlations between the amount of α -tocopherol and induction period of the refined hazelnut oil were found as 0.922, 0.948 and 0.976, at 80, 100 and 120 °C, respectively. In conclusion, oxidative stability of the refined hazelnut oil is high at high temperatures. Therefore, this oil can be used as in cooking processes.

Keywords: Refined hazelnut oil, tocopherol degradation, induction period, oxidative stability



Traceability and Turkey's Regulations in Agricultural Sector in EU Process

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Abstract

In Turkey, the studies about security for food are being made focused on “traceability” in Agricultural and Food sector. Traceability is a system containing tracing food, the animal that food is obtained, feed and the substance that is planned or expected to be mixed with food and all the steps of production, procession, distribution of expected material. With this system, from where, which field, with which distribution way the product with a harmful substance comes can be determined. As of the date of, 28 January 2002, with the regulation of Parliament of European Union numbered 178/2002 “Regulation for Food Safety and Consumer Safety” are brought for the food products that are imported. Turkey effected from this regulation considerably, because according to this regulation, as the date of 1 January 2005 no food suiting EU food law will go into EU borders. Thus, in Turkey also, with the law numbered 5179 which came into force on 1 January 2005, tarecebility necessitated for both in and out market. Although, there ara different traceability systems in the world, the only system with international information standarts and advised by United Nation is EAN-UCC system. EAN-UCC system is implemented by defining radio frequency, barcod or with the help of gadgets such as RSS. Especially barcodes has important roles because they remove the diffculties of entering data. Barcodes enables to number and tag commercial products with a standart. Meeting Turkey with EAN barcode system is mediated through TOBB in late 1988. TOBB became a member of EAN International to solve the problems in defining commercial products, and founded Global Standarts Center within itself to implement EAN-UCC system in Turkey. However, food traceability's being as projected is becoming late because of the complicated construction of the chain under Turkey's conditions, some problems faced in agricultural sector, the traditional ways and lack of infrastructure. Thus, by revealing current system, what to do in order system to gain a more professional structure is argued in this study.

Keywords: EU, Traceabilty, EAN-UCC, Food, Turkey

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Application of Response Surface Methodology for hydrolytic enzymes to enhance clarity of apple, pear and grape juice.

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Abstract

Fruit juices are beverages which are not fermented but able to fermentation. They can be divided into three groups as clear fruit juice, blurred fruit juice and fruit nectar. Clear fruit juice is obtained mostly from apple, grape, pomegranate and sour cherry in our country. The most important component that reducing the clarity of the fruit juices are polysaccharides such as cellulose, starch and pectin. Recently, the quality of fruit juices are improved by increasing the clarity by decomposing these polysaccharides. In this study, co-immobilized cellulase, amylase and pectinase was reacted by mix of each substrates of enzymes (cellulose+starch+pectin) as a model of fruit juice and the efficiencies of enzymes were investigated. The effects of enzyme units that used in co-immobilization studies (100-200 and 300 U), application time (60-120 and 180 min) and temperature (20-35 and 50 °C) on reducing sugar formation, blurry and viscosity were optimized and investigated by using response surface methodology (RSM) (Design Expert 7.0.1.1.). Working set including 17 studies were constructed by the Design Expert Programme and reducing sugar content, blurry and viscosities were determined for each study. These data was evaluated by the programme and data was evaluated statistical by carrying out ANOVA analysis. Surface diagrams and actual value-predicted value diagrams were obtained. Co-immobilized enzymes which were obtained at optimal enzyme ratios were reacted with apple, pear and grape juices in the batch type reactor at optimal temperature for 180 min. Reducing sugar and blurry was measured 30 min intervals for three juice samples.

Keywords: Response surface methodology, amylase, pectinase, cellulase, fruit juice, clarification

Acknowledgement: The authors gratefully acknowledge the financial support for this work by the Scientific Research Units of the Mustafa Kemal University (Project No.: 16440).

Co-immobilization of pectinase, amylase and cellulase for degradation of polysaccharides in batch type and recycled packed bed column reactors

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Abstract

Over the last few years, the development of technologies for fruit juice processing has attracted considerable attention for the juice quality improvement due to increase in natural fruit juice consumption. The freshly pressed fruit juices are turbid and cloudy in appearance due to colloidal dispersion of pectin and cellulose present in the forms of disrupted cell wall and cell materials of fruit, which is one of the major hurdles in clear fruit juice processing. Starch is another potential contributor to the haziness of juice as well as causing the difficulty in filtration due to gel formation. [1]. Recently, the quality of fruit juices are improved by increasing the clarity by enzymatic decomposing these polysaccharides. Pectinase, amylase and cellulase decompose pectin, starch and cellulose, respectively and thus they can be used to enhance the clarity of fruit juices. In this study, pectinase, amylase and cellulase were co-immobilized using several ways to compare their ability on decomposing of model fruit juice (cellulose+starch+pectin). To this, enzymes were co-immobilized covalently on chitosan, silica gel and spacer arm incorporated silica gel via crosslinking by glutaraldehyde. Also enzymes were co-immobilized by entrapment into calcium alginate-chitosan composite gels. Four co-immobilized samples were used to decompose polysaccharides and individual activities were determined. The highest hydrolytic activities of enzymes were observed when they were co-immobilized on silica gel. Co-immobilized enzymes on silica gel were used in batch type and recycled packed bed column reactor during 180 min. The increasing in reducing sugar and clarity was measured depending on reaction time.

Keywords: Co-immobilization, batch type reactor, bed column reactor, amylase, pectinase, cellulase

Acknowledgement: The authors gratefully acknowledge the financial support by the Scientific Research Units of the Mustafa Kemal University (Project No.: 16440).

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Factors Affecting Acrylamide Levels in Coffee Drinks

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Abstract

Coffee is the world's most popular beverage, over 400 billion cups consumed every year. Although people have been consuming coffee for thousands of years, in 2002 researchers discovered that coffee contains acrylamide. Acrylamide, a potentially cancer-causing compound, is formed in many types of foods and beverages that undergo high temperature heat treatment (>120 °C). Coffee is generally roasted at temperatures in the range of 220–250 °C, these high temperatures lead to acrylamide formation. According to the European Union Commission database, roasted coffee finished products have a median acrylamide level of 265-290 µg/kg. With the help of exposure assessments, it was seen that coffee is the major source of acrylamide for regular coffee consumers in many countries. However, coffee variety, defective coffee beans, roasting conditions, storage time and conditions and coffee preparation methods may affect acrylamide levels in coffee drinks. To illustrate, the concentration of main precursors of acrylamide (sucrose and asparagine) in coffee varies in two coffee species (*Coffea arabica* and *Coffea canephora* var. *robusta*). Moreover, defective coffee beans contain significantly higher amounts of free asparagine, which also contribute to relatively higher acrylamide levels in coffee. Additionally, acrylamide formation is dominant at the beginning of the roasting, leading to increased levels at this stage (>7mg/kg). Toward the end of the roasting process, the amount of acrylamide decreases quickly due to higher rates of degradation reactions. Studies related to storage time and conditions showed that acrylamide is not stable in commercial coffee (beans and ground) stored in its original container. Furthermore, it was seen that the type of percolation (including preparation method and coffee/water ratio) may significantly influence the acrylamide amount present in the final beverage.

Keywords: Acrylamide, Coffee drinks, Factors, Acrylamide levels in coffee

The Investigation of The *Aspergillus Parasiticus* Growing on The Wet Blues and Pickled Pelts and Aflatoxine Production

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Abstract

Aspergillus parasiticus is a known fungus that grows during and after leather production processes and is known to produce aflatoxin when it grows in food. Skin or hides are usually sold in pickled or wet blue in the trade and are kept in the factory in this way. Especially during long waiting periods, mold growths are found in wet blues and pickled pelts. In this study, sheep skins were taken and processed into pickled and wet blue and no biocidal agent was used during the treatment. *Aspergillus parasiticus* was cultivated under aseptic conditions on the pickled pelts and wet blues and they were observed for 8 weeks. At the end of this period, samples of pickled pelts and wet blues were analyzed by HPLC device and the formation of aflatoxin of *Aspergillus parasiticus* was investigated. When the aflatoxin analysis chromatograms were examined, aflatoxin B1 peak showed higher values than aflatoxin G1, G2 and B2 for pickled pelts and wet blue samples. The average aflatoxin values in pickled samples were higher than in wet blue samples. Aflatoxin B2 and G2 are found in pickled samples besides lower than aflatoxin G1 and G2. When aflatoxin B1 and G1 were detected in wet blue samples, aflatoxin B2 and G2 were not detected.

Keywords: *Aspergillus parasiticus*, leather, Aflatoxin, wet blue, pickled pelt



Ensiling of Low Rated Dry Matter Materials

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Abstract

Roughages, which take an important place in feeding of ruminant animals, are generally provided from three main sources. These are; meadows and pasture areas, forage crops raised in field farming, stem and straws which are formed field agricultural wastes, and by-products of industrial plants. Supplying of the natural fresh-green fodder for animals depends on the specific ecological condition of each region and is only possible in a certain time of the year. This period does not exceed 150-200 days and varies by regions. Necessity of roughage supplies for animals excluding grazing season is inevitable. Studies for the new fodder source researches has become important because of the price increases in our country and globally. On the other hand, researches of the alternative sources provide recycling of some of the materials that cause environmental pollution and unvalued as nutrients. This compilation informs about ensiling of the high moisturized fodders as fruit and vegetable pulps, harvest wastes of consumed vegetables and feed turnip in our country and the whole world.

Keywords: Ensile, Low rate, Dry matter, Roughage

Determination of Mixture Homogeneity of Mixed Feeds Produced in Kırşehir

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Abstract

In this study, the homogeneities of mix feeds produced in feed mills operating in Kırşehir were determined. Total five feed mills were used to collect 8 samples each weighing 500 g. Chloride method has been used to determine the homogeneity of the mixture. Coefficient of variation (CV) was evaluated by calculating. If CV is less than 10%, homogeneity of the mixture has been accepted as sufficient. The salt content of calf feeds was between 1.49-1.56 %. With regard to homogeneity, feed mills were the nearly same CV values 8.49-8.93. The salt contents of beef cattle feeds were between 1.79- 2.34 % in feed mills. Before analysis, grinding was applied to samples, the salt contents of feed mills were 1.72-3.20%. The determined homogeneities (CV values) were between 6.07-10.03 %. When grinding was performed, homogeneities (CV values) were between 6.08 - 16.11%. The salt contents of dairy feeds were between 1.48- 2.11 % in feed mills, having less salt content. When grinding was performed, the salt contents of dairy feeds were between 1.48-2.20%. Homogeneities were determined as 8.93-16.99 %. When grinding their samples before analysis, they were 9.36-16.66 %. To conclude, all feeds produced in Kırşehir contained higher rate of salt than what suggested in standards. However, the difference between homogeneities of feed mills can be explained by not only different technological traits of feed mills but also errors in operating them. However, there was no any incidence of animal illness or losses due to high salt contained feeds in Kırşehir.

Keywords: Kırşehir, salt, homogeneity, feed, mill

The miraculous plant of Mayan and Aztecs: Chia (*Salvia hispanica*)

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Abstract

Chia (*Salvia hispanica*) is a flowering plant species of the Lamiaceae. It is indigenous to central and southern Mexico and Guatemala. It had been given the name "Chia" which means "Power" because it gave energy long duration about 12 thousand years ago by Aztec and Mayans. Although seeds are very small, modern day has been regarded as super food. In the last few years, the population has increased and it has begun to be consumed with health consciousness all over the world. Chia seed is composed of protein (15–25%), fats (30–33%), carbohydrates (26–41%), high dietary fiber (18–30%), ash (4-5%), minerals, vitamins, and dry matter (90–93%). Besides all this, it is also rich in omega-3. It also contains a high amount of antioxidants. It is helpfull many diseases which are common today, helping to get fit by satiety due to swelling of the stomach when consumed and anti aging properties are distinguished. In addition to these properties, there are some damages if it is over consumed. Chia seeds are planted between February and May and harvested from summer to autumn. They give good yields in humid soil. There are white and purple flowers of the plant which can be grown longer to 1 m. This self-fertilized plant has oval-shaped seeds in white, gray, black, black spotted on white, 1-2 mm in size. In this review; chia which importance, use of areas, benefits and damages, biochemical contents, agriculture and cultivation in Turkey are evaluated.

Keywords: Chia (*Salvia hispanica*), Biochemical content, Agriculture, Areas of usage

Functional Characteristics of Cereals and Cereal-based Products

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Abstract

Functional foods may be defined as foods, which provide benefits beyond basic nutrition and may play a role in reducing the risk of certain diseases. The consumption and the demand of plant-based foods are increasing. This review investigates grains and their usage in development of functional foods. Grains (wheat, oat, barley, rye and maize), fruits and vegetables are the common plant-based foods, which are rich with phytochemicals. Phytochemicals present in cereals are dietary fiber, phenolics, phytoestrogens, antioxidants and flavonoids. The role of fiber in cereals gets great interest due to the beneficial effects on the human health. Mostly non-starchy polysaccharides such as beta-glucans and pentosans are counted as soluble fiber and they are known to reduce serum cholesterol and insulin levels in humans. Insoluble fiber consists of components such as lignin and cellulose, which are protective against colon cancer. Bran layers of cereal grains are the major source of dietary fiber, phenolic compounds and antioxidants. For this reason, it is important to consume whole grain products (bread, pasta, breakfast cereals), which are containing bran layer.

Keywords: cereal; dietary fiber; functional food.

Total and Bioavailable Phosphorus in Harran Plain

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Abstract

South East Anatolian Project is the most important integrated Project which also covers Harran Plain with the total area of 225.000 ha. Especially, over-applications of phosphorus (P) increased soil total P (TP) concentration to high levels while bioavailable P (YP) remain low. The Harran Plain that was sampled at 1x2 km intervals on the grid system, and the soil samples (1032) from the detected points (516) were obtained from depths of 0-30 and 30-60 cm. The soil TP concentrations in the plain were ranged between 301 and 2583 mg kg⁻¹) with a average of 775.8 mg kg⁻¹. The YP concentrations of soils in the Harran Plain changed from 0,1 to 78,5 mg kg⁻¹ with a average of 4.42 mg kg⁻¹. In general, the plain has a medium TP and low YP concentrations.

Keywords: Phosphorus, Total P, Bioavailable P

Some Soil Physical and Chemical Properties in Harran Plain

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Abstract

Harran Plain with the total area of 225.000 ha and irrigated area of 152.000 ha. When the plain having potential of high agricultural production faced the irrigation facilities, the agricultural production increased sharply. Currently, the area of 132000 ha has been irrigated. The Harran Plain was sampled at 1x2 km intervals on the grid system, and the soil samples from the detected points (516) were obtained from depths of 0-30 and 30-60 cm. The soil properties in the plain were detected as 92% clay texture, organic matter (OM (%0,1-6,4)), pH (6,5-9,5), EC (0,1-3,0 mS cm⁻¹), and lime (%10-68). The soil in most of the plain had a low OM content 0-2% (95.6% of the plain) and low EC, while high soil pH and lime.

Keywords: Soil texture, Organic matter, Soil pH, EC

Kinetic Analysis of Different Forest Residues in Slow Pyrolysis

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Abstract

In today's world, the acceleration in the population increase together with developing technology and the changing habits of the modern society have drastically increased the energy demand. Considering the negative impacts of fossil sources on environment, increasing the share of renewable sources in the energy production has changed the direction of their energy planning into a green path and centralized the renewable energy technologies together with traditional fossil sources. Although, Turkey has limited fossil sources, our country appears to seem very lucky with its significant geographical location and climate diversity that create variety in herbal and agricultural production that can be evaluated as energy (biomass) source. It is already known that biomass stands as a promising feedstock for not only producing energy but also valuable platform chemicals via different thermochemical technologies. Among these technologies, pyrolysis is known as the common step of thermal processes that allows a detailed characterization of thermal and kinetic behaviors that can be helpful for the further steps of the operation. Therefore, in this study, three different forest residues, ash tree, *Rhododendron* and *Robinia pseudoacacia*, were selected as feedstocks in order to investigate the pyrolytic behaviors at high temperature region. First of all, the selected fuels were characterized in terms of proximate, biochemical and ultimate analyses. After that thermal experiments were carried out in thermal analyzer (TA) from room temperature to 900°C at 10°C/min heating rate in the presence of nitrogen. The obtained pyrolytic data then used to calculate the kinetic parameters of pyrolysis process. Experimental results showed that pyrolysis is an important process to get insight about the thermal decomposition of the feedstocks. In addition, it can be concluded that the chosen forest residues can be evaluated as environmentally-friendly fuels in the further steps.

Keywords: biomass, characterization, pyrolysis, TA, kinetics



A Popular Dessert : Milk Jam

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Abstract

Milk jam is a sweetened condensed milk. While it has been widely consumed in some south American countries such as Argentina, Uruguay, Brazil and Mexico, it is now increasingly popular in Turkey. Milk jam is also known variously "dulce de leche, milk caramel and dairy confectionary" in these countries. It can be consumed as ice cream sauce, pastry products, filling material and dessert. It is mainly prepared by the addition of sugar, milk and sodium bicarbonate. Sodium bicarbonate is added to prevent protein coagulation during production. Color of milk jam varies between light cream and dark brown according to Maillard reaction intensity and caramelization degree. Although cow's milk is generally used, milk jam is also produced by using goat milk, sheep milk or buffalo milk in some countries. The properties of product change different processing parameters including heating time and temperature, different additives, their addition time and rate.

Keywords: Milk Jam, dulce de leche, Maillard reaction, condensed milk

Investigation of Effectiveness of Some Biopesticides and Their Combinations Against European Grapevine Moth, [*Lobesia botrana* Denis & Schiffermüller (Lepidoptera: Tortricidae)] in Midyat

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Abstract

The study was carried out to determine effectiveness of two *Bacillus thuringiensis* and one Azadirachtin based biopesticides and their combinations (*Bacillus thuringiensis* + Azadirachtin) against european grapevine moth, [*Lobesia botrana* Den. & Schif. (Lepidoptera: Tortricidae)] in twelve years old vineyard in Midyat County of Mardin. Biopesticides were used at recommended doses individually and in different doses with their combinations. No application was done as positive control. Biopesticides were applied against first, second and third generation of the pest, and pest-infested grape bunch, the number of damaged grapes, and efficiency rate of biopesticides were obtained after applications. Results indicated that *Bacillus thuringiensis* based biopesticides used individually were more efficient than Azadirachtin based biopesticide used individually, and all combinations of *Bacillus thuringiensis* + Azadirachtin.

Keywords: *Azadirachtin, Bacillus thuringiensis, Biopesticide, Lobesia botrana*

Using Mixograph Parameters in Selection of Durum Wheat Genotypes

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Abstract

Turkey, which is one of the gene centers of durum wheat, is a very suitable country to cultivate high quality durum wheat in terms of ecology. Many quality parameters are used to determine qualified durum wheat genotypes in breeding programme for selection. Mixograph parameters are very useful and effective for selecting lines. Also mixograph parameters give information about gluten strength and quality in durum wheat. The study was carried out with 11 durum wheat lines and 4 standard varieties (Variety of private sector, Amber (candidate line), Ç-1252 and Eminbey) in randomized block design with three replications under irrigated conditions in Konya-center and Gözlu location in 2015-2016. Some quality traits (thousand kernel weight, protein content, SDS sedimentation, semolina color(b), mixograph development time, peak height, softening (Right Peak Slope), peak width, peak area and total area(energy) were examined. Thousand kernel and hectoliter weight were measured according to AACC 55-10 (Anon. 2000). Durum wheat samples were tempered according to AACC 26-95(%16 humidity to be) and milled by Brabender Jr. According to AACC 26-50. Protein content of the flour was measured using a Leco FP 528 analyzer AOAC 992.23 (Anon., 2009). SDS sedimentation were determined according to AACC 56-70, (Anon. 2000). Color of semolina (Yellowness) values b measured with (Anon. 1996). Mixograph parameters were determined according to AACC 54-40A (Anon., 2000). Quality parameters; thousand kernel weight 30.26-38.45 g, protein content 12.94-14.77 %, SDS sedimentation 13.75-29.75 ml, color(b) 20.45-23.35, mixograph development time 1.55-3.79 dk., peak height 46.47-81.38%, softening 6.46-28.85 dk/%, peak width 2.19-15.13% and total area(energy) 236-407 Nm were determined as. Significant differences were found between varieties in terms of examined traits. Line 14 and Eminbey had the highest value in terms of examined quality parameters. In this study it was determined that the mixographs parameters could be effective in determining of durum wheat quality.

Keywords: Durum wheat, mixograph, quality, selection

Antioxidant Properties and Heavy Metal Accumulation Capacity of *Azolla filiculoides*

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Abstract

This study was designed to test both antioxidant activity and metal accumulation capacity of *Azolla filiculoides* which is a floating aquatic fern. Antioxidant capacity of *Azolla filiculoides* extracts obtained with ethanol were determined by investigating DPPH free radical scavenging potential, metal ions chelating capacity and total phenolic and flavonoid contents. Scavenging effect on DPPH radicals were 32%, 43%, 66%, and 82%, respectively, at a concentration of 0,1, 0,2, 0,4, 0,5 mg/ml. Chelating effects on ferrous ions were 37%, 39%, 46%, and 61%, respectively, at a concentration of 0,1, 0,2, 0,4, 0,5 mg/ml. β carotene and lycopene were found as 0,48 and 0,07 mg/g, respectively. Additionally, this study was intended to test the hypothesis that Lead (Pb) and Cadmium (Cd) accumulation capacity of *Azolla filiculoides*. The plants were exposed to Pb (0, 5, 10, 25, 50 mg l⁻¹) and Cd (0, 0.5, 1, 4, 8 mg l⁻¹) for a period of 7 days. *Azolla filiculoides* accumulated 1436 mg g⁻¹ dw (dry weight) Pb and 2340 mg g⁻¹ dw Cd after 7 days. Consequently, in addition to having high antioxidant potential, *A. filiculoides* is also a suitable candidate for the phytoremediation of low-level Pb and Cd pollution.

Keywords: Antioxidant activity, *Azolla filiculoides*, Metal accumulation.

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The effect of various gum (agar and cellulose) addition on the rheological and textural properties of Triticum spelta flour

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Abstract

Triticum spelta, which is also known as spelt, dinkel wheat, or hulled wheat, is a species of wheat cultivated since approximately 5000 BC. In prehistorical times spelta was grown mainly in the Near East, however it is now grown in the European countries. Due to its high nutritive value, there is a great interest on spelt. Agronomically, spelt may be more resistant to disease, and do better under less advantageous growing conditions, such as wet, cold soils and at high altitudes. In recent years, healthier and more functional products have started to take place in our consumption habits, so that the ancient species of grains have come back to the agenda. In this research, nutritional value of spelt wheat flour and rheological and textural properties was investigated. Spelt wheat gluten tends to be more extensible and less elastic than gluten from modern wheat, resulting in the typical, weaker spelt doughs. Therefore breads prepared from spelt flour has tend to have a lower loaf volume and a coarse texture. Incorporation of agar and cellulose on the rheological and textural properties was investigated.

Keywords: rheology, spelta, agar, cellulose

Antioxidant Activities of Some Macrofungi Species

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Abstract

As the role of oxidative stress on diseases was started to be determined, recently interest on antioxidant sources has been dramatically increased. Reliable natural antioxidant sources rather than synthetic antioxidants having some toxic effects could be preferred to cope with oxidative stress and, thereby, chronic diseases associated with it. The main objective of that study was to determine antioxidant properties of ethanolic extracts of nine mushroom species by investigating their DPPH free radical scavenging potential, metal ions chelating capacity and phenolic and flavonoid contents. Four of macrofungi materials used in the research were collected from Turkey in 2016 and identified as *Agaricus bisporus*, *Agaricus bitorquis*, *Agaricus campestris* and *Agaricus subrutilescens*. Other macrofungi materials were obtained from Gazi University culture collection and identified as *Armillaria mellea*, *Fomes fomentarius*, *Lactarius deliciosus*, *Omphalotus olearius*, and *Trametes versicolor*. Ethanolic extracts of dried mushroom powders were obtained by Soxhlet extraction. Antimicrobial activities of these extracts were tested against eight test bacteria (*E.coli* 0157:m7, *E.coli* 35218, *E.coli* 11229, *Listeria monocytogenes* ATCC 7644, *P. aeruginosa* ATCC 27853, *S. aureus* ATCC 2392, *S.aureus* ATCC 25923, and *S. epidermis* ATCC 12228) by agar well diffusion method. Ethanolic extracts of *Fomes fomentarius* showed highest antimicrobial activity to all kind of microorganisms used in the study. It had inhibition zone diameter between 19 to 32 mm for test bacteria. At DPPH radical scavenging assay, *Lactarius deliciosus* had lowest IC₅₀ value (0,0028 mg/ml) indicating that it had highest DPPH free radical scavenging potential. Additionally highest metal ions chelating capacity was observed in *Armillaria mellea* possessing lowest IC₅₀ value (0,0012 mg/ml). Highest phenolic content was found in *Fomes fomentarius* (46,8 mg/g). Highest β -carotene and lycopene content were both found in *Agaricus bisporus* as 4,8 and 3,4 μ g/ml, respectively.

Keywords: Antimicrobial activity, Antioxidant activity, DPPH, Macrofungi.

The Determining of Some Local Pea (*Pisum Sativum L.*) Varieties Seed Yield and Quality in Cukurova Region

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East Mediterranean Agricultural Research Institute Doğankent-Adana

Absract

This research was carried out to determine the seed yield and quality components of some pea genotypes under Çukurova ecological conditions during 2015 and 2016 at East Mediterranean Agricultural Research Institute Doğankent-Adana Location. Research conducted with different local populations and pea vareties from ICARDA and Menemen gen bank under Cukurova conditions for pea variety breeding. Trials were investigated under winter conditions. At the year of the study, according to the results of the analyses; the highest, the lowest yield results were 273,6-142,2 kg/da, flowering time were 57-38 days, plant heigh twere 121,0-62,7 cm, 100 grain weights were 28,4-15,1 gr .In addition to these, th highestand the lowest protein were 31,84-26,26. This results provide an initial step toward the identification of *Pea* that may be useful for the development of breeding *Pisum sativum L.*

Keywords: Pea, Yield, quality, Genotype.

Bee- Carpet Strategy of Honeybees (Insecta:Hymenoptera:Apidae)

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Abstract

In addition to agricultural crops, the honeybee pollinates many of the native plants that serve as habitat and food sources for our wildlife across the nation, helping sustain the vigor and diversity of the environment. Many species of Vespidae especially hornets are serious enemies of honeybees. However, honeybees have the capacity to defend themselves against this predator. Bee colonies can use defensive strategies that do not require physical contact with their enemies, including intimidational behaviours or physical barriers. This colony aggregation on the bee hive platform in a manner called "bee-carpet behaviour" which contents; shimmering, hissing and building walls of propolis to prevent hornets from getting into the hive. Behavioral differentiations in Bee- carpet is one of the result of co- evolution and adaptation. When foraging activity and number of honeybees involved in the bee-carpet were considered, honeybee defensive behavior varied among apiaries and colonies. Some colonies invested more in foraging activity and less in defence, while other colonies did the opposite. Such variation may be explained by differences in colony strength and stores or different climatic conditions among apiary locations. It could also be related to the genetic composition of the different colonies.

Keywords: Honeybee, Agriculture, Defense, Bee-carpet, Behavior, Hornets, Hive

Effect of cacao bean hulls as a fat replacer on physical and sensorial properties in cake production

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Abstract

In this study, the physical and sensorial properties of low-fat (LF) cakes which are supplemented with raw and leached (hot water) grinded cacao bean hulls/oil in the ratios of 30/70 (30%), 40/60 (40%) and 50/50 (50%) were studied. Weight loss, cake height, moisture, specific volume, texture, and color were measured as physical analysis. Also sensory analysis of LF cake formulations was evaluated. Cake height values were found to be in the range of 8.26-9.23 (cm) and no significant difference was found among all samples. The lowest value in weight loss was found to be 30% raw cacao bean hulls (RCBH) replacement of cake formulation as 5.47% while the highest weight loss was found to be 50% leached cacao bean hulls (LCBH) replacement of cake formulation as 7.35%. Specific volumes were ranged between 2.00 and 2.27 (cm³/g) and no significant difference was found ($p < 0.05$). The texture of the LF cake samples showed higher values on hardness and chewiness; lower values on springiness and cohesiveness than those of the control sample. LF cakes were measured less moisture than control sample. Regarding crumb and crust color of cakes, significant differences were found in all samples ($p < 0.05$). 50% LCBH and RCBH samples presented lowest L*, a* and b* values for both crust and crumb color. LF cakes were measured in terms of cake color, cell uniformity, hardness, oiliness, moistness, fibrousness, chocolate taste, bitterness, odor and sweetness via 0-7 line scale as sensory analysis. Results showed that color, cell uniformity, oiliness, moistness, bitterness values of cakes which were produced by LCBH decreased by comparison with cakes which were produced by RCBH.

Keywords: Cacao bean hulls, low- fat cake formulation, texture, sensory analysis



THE PRESENTED POSTERS IN THE ICAFOF CONFERENCE ARE LISTED BELOW.

THE OTHERS PAPERS IN ABSTRACT PROCEEDING BOOK ARE ORAL PRESENTATIONS

POSTER PRESENTATIONS

Determination of the Nutritive Value of Some Chickpea Varieties Using in vitro Gas Production Technique
Changes In Anthocyanins Of Red Grape Juice During Juice Processing
The Effects Of Gravading Process And Vaccum Packing On The Fatty Acid Profile Of Carp Fillets (Cyprinus Carpio)
Recent Perspectives on 3-MCPD and 1,3-DCP Levels in Various Food Groups
Cloud-based Early Warning System Design For Greenhouse Environmental Conditions
Effects of Humic Acid Applications on Nitrogen Use Efficiency of Lettuce (<i>Lactuca sativa</i>)
Determination of in vitro Antagonistic Potentials of Endophytic Bacterial Isolates against Anthracnose Disease Agent <i>Colletotrichum gloeosporioides</i> on Lemon (<i>Citrus limon</i> L.) Trees
Identification of Plant-Associated Microorganisms Employing MALDI-TOF Mass Spectrometry as a Rapid Detection Technique
Isolation, Identification and in vitro Screening Antagonistic Potentials of Endophytic and of Epiphytic Bacterial Isolates From Cotton Plants Against <i>Sclerotinia sclerotiorum</i>
Prevalence of Major Fungal Diseases of Alfalfa (<i>Medicago sativa</i> L.) Plants Growing in Hatay Province of Turkey.
The Flavor And Sensory Characteristics Of Some Herbs And Spices
Effect of different tannery sludge compost levels on the yield and some agronomical characteristics of maize (<i>Zea mays</i> L.)
Determination of Poultry Meat Consumption Habits and Brand Preferences of Consumers Living in the Province of Osmaniye
Microencapsulation of Bacteriocin for Food Preservation
Antiviral and Antimicrobial Activitiy of Biologically Active Recombinant Bouganin Protein from <i>Bougainvillea spectabilis</i> Willd
Plant-sourced proteases used in cheese making
The New Technology Usage at Turkish Dairy Farms to Better Reproductive performances
Bee- Carpet Strategy of Honeybees (Insecta:Hymenoptera:Apidae)
The Using of Nanomaterials to Milk and Dairy Products
Cork stoppers and alternative wine closures
Studies on pests in some minor vegetables cultivated in Antalya province
Banana Starch as Potential Functional Food Component
Onion Juice Pasteurization by Coiled-Type UV-C Reactor System
Determination of the Nutritive Value of Some Bread Wheat Varieties Grown in East Mediterranean Agricultural Research Institute Using in vitro Gas Production Technique
Antimicrobial effect of nanoemultions on spoilage bacteria isolated from sea bass
The Comparison Of Alternative Methods For Surımı Production From Dark Muscle
Determination and Population Fluctuation of Insects in Sweet Corn Fields, Malatya, Turkey

The Endogenous Hormones in Lettuce Seedlings Under the Combined Effects of Nitric Oxide and Salt Stress
Using Mixograph Parameters in Selection of Durum Wheat Genotypes
The Efficacy of Fungicides against <i>Coniella granati</i> Causing Fruit Rot on Pomegranate in the Mediterranean Region of Turkey
Antifungal Effects of Boron Derivatives against <i>Geotrichum citri-aurantii</i> , the Causal Agent of postharvest citrus Sour Rot
Determination Of Some Characteristics Related To Yield Components Of Advanced Breeding Chickpea Lines In Konya Ecological Conditions
Antioxidant effects of different solvent extracts from <i>Ebenus hirsuta</i>
A new pest in globe artichoke production areas of the Western Mediterranean Region: <i>Vanessa cardui</i> (Linnaeus, 1758) (Lepidoptera: Nymphalidae)
Susceptibility of Some Bread Wheat Varieties to Foliar Diseases in the West Mediterranean Region of Turkey
Anthocyanin Contents of Ice Creams Coloured With Black Rose Hip Fruit and Seeds Extracts
Effects of Some Insecticide on Eggs of Tomato Leaf Miner, <i>Tuta absoluta</i> (Meyrick) (Lepidoptera: Gelechiidae)
Determination of Peas Genotypes for Yield and Yield Components in Cukurova Region
Effect of Different Sources and Levels of Zinc on Performance, Egg Quality and Serum Mineral Concentration in Laying Hens
Digestibility profile and pasting properties of different RS sources
Observed Changes in Annual and Seasonal Temperatures in Nevşehir (Central Anatolia, Turkey) for Period 1960-2016
Economical Evaluation Of Wheat-Silage Maize Rotation In Adana Ecological Conditions
Antioxidant capacity of methanol extract from roots of <i>Asphodeline brevicaulis</i> subsp. <i>brevicaulis</i> var. <i>Brevicaulis</i>
Protective Effects of Bergamot Peel Extracts on Fish Lipid
The Relationships Between Some Physicochemical Properties and Nutrient Element Content of Paddy Soils on Alluvial Land in Terme Region
Allelopathic Effects of Some Herbs and Medicinal Plants' Extracts on Seed Germination and Seedling Growth of Pepper
The Effect Of Salicylic Acid And Humic Acid Applications On Some Properties Of Lentil
The Effects of Different Growing Media on Plant Growth Criteria of Some Bulbous Ornamental Plants (<i>Hyacinthus orientalis</i> 'Pink Pearl', <i>Narcissus</i> 'MountHood' ve <i>Tulipa gesneriana</i> 'Golden Apeldoorn')
The determination of the effect of aluminum and humic acid on common bean (<i>Phaseolus vulgaris</i> L.) seedlings grown in deep water culture
UV Spectrum Determinations of Fish Lipids Treated with Grapefruit Peel
Immobilized enzyme
Population Dynamics of the <i>Trialeurodes vaporariorum</i> (Westw.) (Aleyrodidae, Hemiptera) on Broccoli Under Greenhouse Condition, in Malatya, Turkey
An uncultured bacterium associated with infection in <i>Brassica oleracea Italica</i> in Malatya province
The effect of various gum (agar and cellulose) addition on the rheological and textural properties of <i>Triticum spelta</i> flour
Pasting properties of spelt flour enriched with chestnut flour

Apple Production Potential in Central Anatolia Region
Protective Role of Selenium in Fish
Determination of potential pests of Lepidoptera species on commonly grown stone and pome fruits trees in Hatay Province of Turkey
Some biological features and current status of Spotted stem borer <i>Chilo partellus</i> (Swinhoe) in Pakistan and Turkey
Cicadellidae (Hemiptera) Species in Sweet Cherry Orchards of Eastern Mediterranean Region, Turkey
Microbiological Properties of Strained (Süzme) and Burnt (Yanık) Yoghurts Consumed in Denizli
Some Properties of the Lyophilized Black Mulberry (<i>Morus nigra</i> L.) Water Extract
Novel Technologies Used in Freezing of Foods
Effects of High-Pressure Technology on the functional properties of dairy foods
Simultaneous Determination of a Wide Spectrum of Bioactive Compounds in Edible Oils by Means of On-line Column Switching SPE-FIA-HPLC/ELSD System
Alternative Source Of Protein And Oil: Sour Cherry Kernel
Determination of Rheological Properties of Biscuit Grade Flour Blended with Different Flours
Determination of Some Properties of Jams Produced with Sweet and Sour Pomegranate
Screening of Some Lentil Cultivars for Root Rot Resistance to <i>Fusarium solani</i> Under Controlled Condition
Adaptability Of Edible Film And Coating Production Into Industrial Scale
Influence Of Sunflower Oil Addition On Water Vapor Permeability Of Whey Protein Isolate Based Edible Films
Aminoglycoside Resistance in Enterococci
Determination of Different Ratios of Alfalfa (<i>Medicago sativa</i> L.) and Maize (<i>Zea mays</i> L.) Mixtures on Silage Quality
Some Individual Phenolic Compounds of Tea Liqueurs Produced Using Different Tea Concentrations and Extraction Times
Determination of Caffeine Amount and Colour Values of Liqueurs Produced Using Different Tea Concentrations and Extraction Times
Sensory Analysis: A Tool For Evaluating Quality Foods
Surimi and Surimi Products as a Fish Processing Technology
Properties Of Tomato Peroxidase
Formation Of Biogenic Amines In Sausage
Sucuk
Determination of Some Properties of Wines Produced Using Traditional and Ultrasound Maceration
Effect of Ultrasound Application on Wine Ageing
Modelling of extraction parameters of microwave and freeze-dried paprika oleoresins
Applications of Electric Field and Natamycin Combinations on <i>Saccharomyces cerevisiae</i> Spoilage in Fresh Orange Juice

Novel Technologies In Meat Industry
Slime formation, DNase activity and hemolytic activity of <i>Pseudomonas</i> spp. isolated from Black sea anchovy (<i>Engraulis encrasicolus</i>) and calf meat
Using the Multilevel Growth Curve Analysis to Evaluate of Growth Performances of Hair Goat Kids
Quinoa Seeds as a Beneficial Nutrient and Several Quality Parameters of Quinoa Seed Oil
Determination of Some Quality Parameters of Pasta Wheat with NIRS (Near-Infrared Reflectance Spectroscopy)
Investigation of Antioxidant and Antimicrobial Activity of Pomegranate Peel
The Effects of Different Seed Quantities and Cutting Times on Quality Properties of Kentucky bluegrass (<i>Poa pratensis</i> L. Geramino)
Determination of population density of Mediterranean fruit fly, <i>Ceratitis capitata</i> (Wiedemann) (Diptera: Tephritidae) in persimmon orchards in Hatay province
Chronological Course and Effects of Agricultural Support Policies in Turkey
Eriophyoid Acars (Acarina: Eriophyoidea) on Poaceae in Van Lake Basin
Effect Of Different Sowing Methods On Yield And Yield Component In Wheat Cultivation
Determination Of Earlier And Yield Value In Some Barley (<i>Hordeum Vulgare</i> L.) Varieties Grown In The Eastern Mediterranean
Growth Performance and Survival Rate Traits in Southern Anatolian Red Calves
Enzyme inhibitory activity of water extract from <i>Potentilla reptans</i>
Determination of Cicadellidae and Cixiidae (Hemiptera) Pest Species of Potatoes in Hatay Province of Turkey
Prevalence, characterization and antibiotic resistance of <i>Klebsiella</i> spp. isolated from marine and freshwater fish in Turkey
In Vitro Propagation of some <i>Prunus mahaleb</i> L. Genotypes
Viruses Infecting Small Fruits in Turkey
High Soluble-Fiber Pudding: Formulation, Processing, Texture and Sensory Properties
Fish Antifreeze Proteins and Applications
Evaluation on Heat and Drought Tolerance Capacity of Chickpea
Enzyme inhibitory activity of ethyl acetate extract from <i>Potentilla recta</i>
Antioxidant activity of ethyl acetate extract from <i>Potentilla recta</i>
Enzyme inhibitory activity of methanol extract from <i>Potentilla recta</i>
Antioxidant properties of methanol extract from <i>Potentilla recta</i>
Antioxidant capacity of water extract from <i>Potentilla recta</i>
Enzyme inhibitory activity of water extract from <i>Potentilla recta</i>
Enzyme inhibitory activity of ethyl acetate extract from <i>Potentilla reptans</i>
Enzyme inhibitory activity of methanol extract from <i>Potentilla reptans</i>

Screening of Some Lentil Cultivars for Root Rot Resistance to <i>Fusarium solani</i> Under Controlled Condition
Temperature dependency of sweet cherry concentrate colour: a kinetic study
Effects of microwave output power and sample amount on drying kinetics of <i>Melissa officinalis</i>
Factors Affecting Acrylamide Levels in Coffee Drinks
Effects of Extraction and Spray Drying on Phenolic Content of Blueberry
Developing Properties of New Endemic Crustless Pumpkin Seeds and Sensory Consumer Satisfaction of It
Salt Tolerance Of Hamburg Misketi (<i>V. Vinifera</i> L.) And Isabella (<i>V. Labrusca</i>) Grape Cultivars
Determination of Recreational Potential of Limni Lake Nature Park
Effect Of Different Breeding Systems On Growth Performance, Carcass And Meat Quality Of Japanese Quails (<i>Coturnix coturnix Japonica</i>)
The Effects of Dried Plum Puree on Some Quality Parameters of Model System Meat Emulsions
A comparative study of fatty acid composition of tree mushroom species from Anatolia
Galactooligosaccharides Production by Using β -galactosidase from <i>Aspergillus Oryzae</i> : Effect of Lactose Concentration
Recovery of phenolic compounds from pomegranate husk: A comprehensive review on membrane processes
Effects of Black Mustard Seed Concentration on the Viability of Yeasts During Fermentation of Hardaliye
Tailoring Surface Structure of Polyamide Membranes via Low Pressure Plasma for Improved Reverse Osmosis Performance in Pomegranate Juice Concentration
Optimization of Extraction Parameters on the Isolation of Carotenoids and Polyphenols from Persimmon Peel
The Use of Blueberries in Muffin Cakes
Technical Textiles for Agricultural Applications
Current Status of Grapevine syrah virus 1 in Different Grape Varieties in Turkey
Serological and Molecular Detection of Viruses, Which are Causal Agents of Wood Deformation (Rugose Wood) in Grapevine Producing Areas in Hatay and Tekirdağ Provinces
An Overview of Fruit Tree Phytoplasmas and Their Potential Vectors in Turkey
Genetic Variability of Turkish Grapevine rupestris stem pitting-associated virus Isolates
Isolation and Molecular Characterization of Xylanase Producing Yeasts from Tree Bark
Effect of enzymes used in cheese making for the composition of whey
Antimicrobial Activities in Some Edible Macrofungus Strains Growing in Tunceli Region
Square-Wave Adsorptive Stripping Voltammetric Method for the Selective and Simultaneous Determination of Vanillin and Caffeine in the Commercial Food Samples using a Boron-doped Diamond Electrode
Electrochemical Behavior of Ellagic Acid at a Boron-doped Diamond Electrode and Its Determination by Square-wave Adsorptive Stripping Voltammetry in the Foodstuffs
Optimization of Process Conditions and the Quantity of Bulgur Flour in African Couscous Production

Some Abnormal Effects of Extreme High and Low Temperatures on Fruit Trees
Drying Properties Of Tray Dried Mushroom
A Review on the Use of Biosensors for Determination of Food Compounds
Model Development for the Prediction of Astaxanthin Production
Kinetic Modelling for Fucoxanthin Production
Determination of edible oil quality of the safflower plant seeds and comparison with standards
Influence of Pseudomonas sp. isolates on plant growth and soil enzyme activities
Effects of biofertilizer containing arbuscular mycorrhizal fungi on triticale growth
Some Quality Properties of Fish Fillets Coated with Paprika Pomace and Seeds
The Investigation Of The Aspergillus Parasiticus Growing On The Wet Blues And Pickled Pelts And Aflatoxine Production
Molasses (Pekmez) as a Traditional Taste
Antimicrobial Activities of Some Medicinal Plants in Turkey
Soil Microbiological Properties of Maize Grown soils in Harran Plain
Organic Agricultural Approaches in Phytosanitation
Physical and Sensory Characteristics of Cakes Produced with Coffee Silverskin as Fat Replacer
Response of Sunflower, Safflower and Cotton to Sublethal Glufosinate Rates at Seedling Stage
Effect of cacao bean hulls as a fat replacer on physical and sensorial properties in cake production
Organik Atık Uygulamasının Farklı Ph Değerlerinesahip Toprakta Dehidrogenaz Enzim Aktivitesi Üzerine Etkileri
Salt Stress Effects during Germination on Barley
Functional Characteristics of Cereals and Cereal-based Products
Plant development in two different tomato species grown under traditional farmer conditions
Tasting Sensory Analyse Of Mixed Cooked Rainbow Trout (Oncorhynchus mykiss) Caviar And Chicken Egg
Diagnosis of Plant Species in Wetlands of Erzurum
Measurement Of The Amount Of Nitrogen And Other Plant Nutrient Elements In Soil Via Laser Induced Breakdown Spectroscopy (Libs) For Fertilization Programs
Güneydoğu Anadolu Bölgesinde Pazarlanan Kurutmalık Üzüm Çeşitlerinin Bazı Kalite Özelliklerinin Belirlenmesi
The Comparison of Organic Plant Production Potential in the Province of Antalya with Turkey and the World, and Some Suggestions on the Development of this Potential
Relationship Between Macrophomina phaseolina and Cyindrocopturus adspersus in Sunflower
Fungal and Bacterial Antagonistic to Verticillium dahliae Kleb in Cotton Field
Strategies For Increasing Resistant Starch In Starchy Products

Nutritional Value Of Mushrooms And Its Effect On Enrichment Of Bread
Early Flower Development Schedule in <i>Crataegus tanacetifolia</i> (Lam.) Pers.
Effects of Various Edible Film Coatings on Quality and Shelf Life of Sweet Cherries: A Review
Investigation of the Presence of Genetically Modified Organism (GMO) in Baby Foods Consumed in the Market of Turkey
Investigation of Effectiveness of Some Biopesticides and Their Combinations Against European Grapevine Moth, [<i>Lobesia botrana</i> Denis & Schiffermüller (Lepidoptera: Tortricidae)] in Midyat (Mardin)
Effect of fish gelatin coating containing laurel and thyme oils on quality of sea bream (<i>Sparus aurata</i> L., 1758) filets at refrigerated storage (+ 4°C)
Determination of Nutrient Composition of Some Feeds Used in Farm Conditions
Determination of the Effect of Solvent Type on the Antioxidant Activity of Artichoke Leaf (<i>Cynara scolymus</i> L.) Extract
Microencapsulation of food aromas
A study on the determination of some <i>Bemisia tabaci</i> (Genn.) (Hemiptera:Aleyrodidae) populations by Polyacrylamide Gel Elektrophoresis
Investigation of some biological features of <i>Hippodamia</i> (<i>Adonia</i>) <i>variegata</i> (Goeze) (Coleoptera: Coccinellidae) on Cotton Aphid, <i>Aphis gossypii</i> Glover (Hemiptera: Aphididae)
Influence of addition rosemary essential oil on oxidative stability of pistachio puree under accelerated conditions
The effect of mycorrhiza inoculation on growth of safflower (<i>Carthamus tinctorius</i> L.) for remediation of contaminated soils
Detection of main pests and diseases of maize in Hatay-Turkey
Detection of Virus Diseases in Tobacco (<i>Nicotiana tabacum</i>) Fields of Hatay-Turkey
A Study To Determine Yield And Yield Component Interactions On <i>Icarida</i> Spring Chickpea (<i>Cicer Arietinum</i> L.) Varieties In Çukurova Conditions
Using of Chickpea Flour and Celery Powder in Cookies
Pathogenic Roles of Olive (<i>Olea europa</i>) Pollens in Mediterranean area of Turkey
Transcriptome-Based Identification of ABC Transporter gene in sunn pest, <i>Eurygaster maura</i>
Determination of organic acid and volatile fatty acid content in natural sweet chestnut from Giresun/Turkey origin
Development of Time-Temperature (TTI) Indicator with Betalains from Red Beet (<i>Beta vulgaris</i>)
Impact of Vacuum Assisted Microwave Drying on Hydroxymethylfurfural Content in Bee-pollen
Determination of Isoflavones in various food samples by High Performance Liquid Chromatography
Physical and Sensory Properties of Cakes Produced With Different Brands of Sunflower Oils
Chemical Characteristics of Sucuk
Biocide Resistance of <i>Enterococcus</i> Isolated from Various Food Samples
The Effects of Poppy Oil on Formation of Biogenic Amines in Fermented Sucuk
Investigation of Antimicrobial Resistance of <i>Salmonella</i> spp. from Chicken Meat and Ground Beef

Determination of Antimicrobial Resistance of Cronobacter spp. Isolated from Foods
Food Dyes and Their Analysis Methods in Food Industry
Genomic Applications of Entomopathogens for Pest Control
Genetic analysis of Verticillium wilt resistance in Cotton
Mutation Breeding In Fruit
Determination Of Mixture Homogeneity Of Mixed Feeds Produced In The Province Of Kırsehir
Vaccinium myrtillus L. extract can inhibit the oxidative stress in diabetic rats' spleen tissue
The effect of Vaccinium myrtillus L. extract on oxidative stress in the brain tissue of diabetic rats
Postharvest quality of Tulipa agenensis flowers and bulbs
Effects of High Pressure Processing on the Sensory Quality of Marinated Herring
A morphometrical study from three-dimensional reconstruction of femur in red fox (Vulpes vulpes)
Study on the Polymorphism of MSTN gene in Salmo trutta, Dicentrarchus labrax and Oreochromis aureus
Analysis of Garlic Production and Marketing in Kahramanmaraş Province of Turkey
Co-immobilization of pectinase, amylase and cellulase for degradation of polysaccharides in batch type and recycled packed bed column reactors
Occurrence of Viruses on Rocket Crops in Samsun, Turkey
Effects of Ohmic Thawing Process on Some Quality Characteristics of Minced Beef Meat
Ohmic Heating of Beetroot Juice: Exergetic and Energetic Efficiencies
Antioxidant activity of yeast (Saccharomyces cerevisiae) enriched cookies
Monitoring of Heavy Metals in Spices and Herbal Plants from Turkey
Biosynthesis of Higher Alcohols and Acetate Esters from Orange Peel Waste by Kluyveromyces marxianus
Good Agricultural Practices (GAP) For Some Citrus Species and Cultivars
Optimisation of biomass production of S.cerevisiae from date's extract using response surface methodology design
Contribution to the upgrading of poultry feathers as an element of fungal fermentation medium
Antifungal activity of aqueous and methanol Calycotome plant extracts (Algeria)
Affects Mixing Time On Physical And Chemical Properties Of Manna
Bacillus amyloliquifaciens (9SRTS) had important in vitro biocontrol features and increased chickpea yield production under pots and field experiment
Novel Thawing Technique for Frozen Foods: Ohmic thawing
Pomegranate pestil production by different drying methods: Effect on bioactive compounds and volatile profile
An Approach to Dormancy Breaking Techniques of Crop Seeds

The Level Of Effect Of Environmental Noise On Hospital Yards: Example Of Samsun Province
A research about "Healing Gardens"
DNA Barcoding analysis of <i>Anopheles claviger</i> from Turkey
Sequence differences between <i>Culex pipiens</i> complex
Drying Meat And Meat Products
Comparison of reactions of tomato seedlings with different true leaf stages to <i>M. Incognita</i>
Evaluation of the chemical control applications of producers in pome-fruit (apple, pear, quince) orchards of Korkuteli county in Antalya of Turkey
Disease problems of the vegetable and fruit producers of Elmalı county in Antalya province of Turkey
Calculation of Spirulina (<i>Spirulina platensis</i>) Production Chemical Ratios by Developing New Software
Transcriptome based identification of two serine protease inhibitors from sunn pest
A potential Target for Sunn Pest Control: Identification of Odorant binding Protein in <i>Eurygaster maura</i>
Starch Based Sugar; Production, Properties, Usage and Health Effect
Application Of Nanotechnology In Food Packaging
Traditionally Produced Bitter Orange Sour as a Salad Sauce
A Review on the Damage of <i>Bremia lactucae</i> and the Methods of Race Determination
The Comprasion Of Poultry And Seafood Gelatin Characterization
The Effects of Different Chelated Iron Fertilizers on Iron Deficiency Chlorosis in Apple Trees
A Popular Dessert : Milk Jam
Antioxidant Activity of <i>Centaurea Staphiana</i>
Determination Of The Effect Of Different Types And Quantities Of Selenium Applied To Dwarf Bean Plant
Physical Properties of Refrigerated Anchovy Fillets Dipped with Natural Antioxidant Extract Isolated from Shrimp Shells
Some Compositional Properties of Rosehip (<i>Rosa canina</i>) Kernel Oil
Tocopherol degradation of refined hazelnut oil during heating at different temperatures
Antioxidant Effect Of Medicinal Plants In Meat And Meat Products
The Effect of Phospholipids an Pastirma Quality and Nutritional Value
Antioxidant Activities of Some Macrofungi Species
Antioxidant Properties and Heavy Metal Accumulation Capacity of <i>Azolla filiculoides</i>



Nevşehir
Ziraat Odası Başkanlığı

